

Field Book
of
Willis L. Jepson

- 1912 -

— " —

University of California,
Berkeley.

If lost finder please
return to W. L. Jepson,
Department of Botany and
receive reward.

Agave
No. 5139.

Vacaville, Aug. 10, 1912

- Valley Oak acorn crop. Ralph Platt says: Two oak trees at an old ranch had, I should think, at least 6 or 7 bushels full in the year we first came to the ranch. I had never seen them before and was much impressed.

- H. A. Greene in litt says: Coast ^{Cal.} Live Oak, 200 lbs; Black Oak 300 lbs, acorns. - Aug. 11, 1912.

- *Arctostaphylos punila* vs. *nevadensis*. H. A. Greene sent me *Arct.* ^{leaf} *punila* without loc. and I decided to call it *A. punila*. Later he told me it was from Mt. Shasta! So it is *A. nevadensis*!! I think the two may have to go as one species unless better difs. can be found than are now known. - See Greene's letter of Sept. 10, 1912.

No. 5156. *Amuri magnus* L. 4 in. to
2 $\frac{3}{4}$ ft. high. Mostly simple and
with one terminal umbel; only the
larger plants branching at-top,
then mostly 3-umbel. Bracts
14; conspicuously reflexed! or
reflexed spreading, better!

Bractlets 12 to 14, also reflexed-
spreading, but not so strongly
nor so conspicuously. — The
description in 2nd Ed. Fl. W. ind.
Cal. badly in need rev. and
rather mixed. Leaf-segments
not lacinate or toothed, not
spatulate, but entire and
linear or subulate. Bracts were
better described as reflexed; bractlets
as reflexed-spreading. [But 5156 = *Amuri*
visnaga Lam.! — W. L. J. in 1920.]

No. 5157. *Aphyllon comosum*
Gray.

Corolla dull white, pink-tinged
+ -veined. Upper lip erect, ~~not~~
rather deeply; lower lip deeply
parted into broadly lanceolate
lobes. Between the lobes of lower
lip two folds, very marked and
the fold in relief on the lower
side, the fold so folded as to
be really tubular with the "mouth"
or "opening" of the tube appearing
on lower side of throat or
palate. Stamens 4, lower pair
slightly longer. Anthers woolly.
Stigmas 2, large, resembling
shaggy stigmas *Diplocus*
glutinosus. Sepals linear-
lanceolate, nearly distinct!
but obviously united — On
Ribes vitifolius.

No. 5158. *Cirsium coultteri*
Cnicus. 6 ft. h.

No. 5159. *Symphoricarpos racem.*
leaf variation.

- *Menziesia laevis* ^{caulis}, very fragrant, esp. at night, says W.F. Bode. Bode says the flowers open up more at night!
- Shrubs of Cal. = Thickets along Saratoga Ch = *Rosa Californica*, *Symphoricarpos racemosus*, *Rubus vitifolius* ^{L. & S.}, *Rhus diversiloba*.

- Went up Saratoga Creek with Miss Rowena Beans in her machine from "Wildflower Hill" where I am staying. Along the creek *Cornus glabrata*, ^{no. 5161,} grows in abundance, forming quite a thicket along the road in the canon. I was astonished at the size of the individuals, fully 18 ft. h. and perhaps 22 ft. h. The trunks were very slender,

unbranched to 10 or 12 ft., about the same diam. all the way up. The diam is about 2 1/2 inches, maybe 3 in. at ground. This tall stem or branch bears a rather narrow crown whose branchlets usually had a tendency to droop. Sometimes these branchlets became very long and cord-like, in some cases reaching the ground and taking root!! These long pendulous cords had only few and short branchlets at intervals. See below.

No. 5160. *Polygala californica* Nutt. fruits. shade woods.

No. 5161. *Cornus glabrata* Benth.

See p. 4. Drooping pendulous cord-like branch taken, 16 ft. 7 in. long! about 3 or 4 ft. of it trailing on ground.

No. 5162. *Baccharis*

Milpitas - 4 ft. h.

-Teratology. *Solanum umbelliferum*. See dried spec.

Berkeley.

- *Descurainia californica*. Miss Ruth Ruddock says: - Near Lower Lake, on ranch the terminal Buckeye flower comes into anthesis first, then the other flowers of the 'type' from below upward. *Nicotiana* [either *bigelovii* or *attenuata*] gathered in quantities by the Indians for tobacco this summer. Mr. Ruddock says: Limbs fall after the sap is all up in the Valley Oak and in the driest and most quiet weather. That is why the people call it Mush Oak. The fracture is a straight across fracture, not a splintery one.

- Flowers below J.O. Pass. Miss Haskell & Miss Bruce, of dif. parties, says the display very fine here in end of July, 1912.

- Tallest Redwood. Allan Carpenter says: There is simply glorious timber on Bull Creek in Humboldt Co. It is prime. And a lot of it. It is very dense, so dense that *Oxalis* does not grow and it is

Aug. 18, 1912.

to be pretty dense because *Oxalis* is the characteristic growth under Redwood. The trees average 300 ft. h. I am confident. They are so tall you cannot pick out the tallest ones. They simply go up and lose themselves in the sky. Well we went to an elevation and from the elevation we could pick out a number of big ones, some especially tall ones stood out above the general level. They must have been very tall for that. But when you leave the elevation and go down into the miles of timber, you lose the trees right away. You can't locate ^{tall} them. An ant might get on a post and look over a wheat field and pick out a tall stalk, but

when he went down into the field to locate that stalk he wouldn't be able to find it.

I think the best way would be to locate a tall tree from two different points and by compass work toward it.

The compass would constantly correct itself as you make around a tree and there

would be less error than in using a transit. The traverse could be marked by tying pieces of cloth to bushes or stakes. What a hunting! Bear and lion wouldn't be in it with such hunting as that!

There is also fine large timber on Larrabee Creek but it is now being cut and there is probably

nothing so fine as the timber on Bull Creek. Jehsald Johnson, Dryville P.O. is an old gent. who takes an interest in big trees.

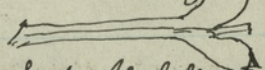
- Climate. Summer very dry; wells, springs, in Coast Ranges going or gone dry, scarcity of water, high sierras on line Western Pac. R.R. very dry acc. Miss Beano.

- result of dry winter. First rain on Sept. 2; rained softly at night, light fall. Rained heavily Sept. 5. Chico = 4.55! Mogalia, 7.86! Santa Rosa 3.19! 6

- Giant Australian tree felled; 420 ft. high, says Burton B. Sampson, Bringelly, via Liverpool, Sydney, N. S. W., Australia, acc. Dr. Allan Carpenter who thinks the man reliable. The man was recently in Cal., just sailed for Australia. - Sept. 1, 1912.

- *Menziesia nuciantha* of my Chas. Lohr list (*Erythra vol. 1.*) is prob. dispersa.

- Rosa. *R. pisocarpa* has no essential pt. of dif. with *R. cal.* and I doubt its distinctness. I have made out a pt. as to stip. for use in Shrub. Cal. but I doubt if I hold. *R. pisocarpa* seems to have suddenly enlarged stip. tips



often somewhat flabellately dilated.

R. cal. seems remarkably variable in pubescence or lack of it and thinness or thickness of fl.

R. pisocarpa. calyx - looks not reflexed on lips as said in Bot. Cal.; leaflets ^{more} likely to be petiolelets than in *R. cal.* - Sept. '12

Look up Cephin, Bull. Soc. Bot. Belg. 15 (1896) Murray, Roses; he has a no. of vars. of *R. Calif.*

Ellen Willmat, The Genus Rosa, an elaborate but not very satisfactory treatise as to specific

distinctions. She says *R. californica* has deciduous sepals.

I find no essential distinction betw. *R. cal.* + *R. pisocarpa*. Yet the typical *R. cal.* with its stout-based prickles is very dif. from *R. pisocarpa*. The S. Cal. forms of *R. cal.* are hard to separate.

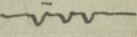
- Oct. '12.

- One is very much amused at the men who never admit not knowing a thing. Leonard Bacon, a bright young chap, replied to a query in a circle at the Faculty Club that he had never read Dickens' *Our Mutual Friend*. One of the older professors took him aside afterwards and told him not to admit such things. "Perhaps one has to know a big lot to say he doesn't know!"

- Ethereal oils and native shrubs. Prof. Hilgard remarked today that he had *Calycaethus*, presumably *C. flexuosus*, in his garden and that it was quite lacking in odor as compared with the same shrub in its native home. Shrubs too, along the coast, lack the odors of shrubs in the interior or Great Valley, esp. chaparral shrubs. - Oct. 1.

Eschscholtzia

Shaw-colored fall forms
all gathered n. of r.r. track and east
of Davis lane, $\frac{1}{4}$ mi. e. of Vacaville.
No. 5163. *Eschscholtzia californica*
Cham. var. *erecta* (Benth.) Jepson.

no {  } east of Pole 63, n. of r.r.
40 {  } " " " about 25 ft
5 ft {  } These three spikes are
close together in slope
of bank and opposite
2nd board ^{from bottom} of fence with 3
notches on top, so: 
the third 2 ft. east a little n.

20 {  } 48 ft. w. of Pole $\frac{1}{17}$
Penny {  } S.E., on
spike {  } slope of bank rather near
path along r.r. (n. of r.r.)
the wires in a row east
& west, 2 of them opp.
3 notches in fence, 2nd
board from bottom
the third 4 ft. further west.

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This sheet not marked in field
book at time taken but location
must be near others since all close
together. Or a marking mistake for  on sheet.



East 6 ft from Pole $\frac{1}{17}$ +
S.E.
on bank 2 ft. from path



Same as preced. but 4 ft. from
path, 26 ft. east of Pole $\frac{1}{17}$
and opp. 1 notch in 2nd board S.E.
from bottom of fence.

See the following east of Pole $\frac{1}{15}$
(first pole east of Davis roadway)
n. side of track, and about
half way to next pole east $\frac{1}{16}$
all the marks are bolts and
not spikes. Notches in fence all
2nd board from ground.



opposite 2 notches in fence.
and 8 $\frac{1}{2}$ feet therefrom.
There is a spike of the prev.
markings right alongside
with preced. in n. + S. line on



side of path and offset w.
2 feet.

17 ft. east of preced. + opp. 4
notches in fence, 2 ft. from
path

2 ft. further east from preced.
+ a little nearer path.

Alongside preced + 1 ft.
nearer path.

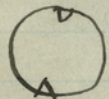
Opp. 1 notch in fence,
between notches 2 + 4,
+ 4 ft. from path.

Directly in n. + s. line
with preced. + 1 ft. from
path.

R.R. spike opp. 3 notches
in fence + 80 ft. w.
of Pole $\frac{1}{16}$ + 5 ft. from
path.

broken head r.r. spike 62
ft. w. Pole $\frac{1}{16}$, opp. one
long and no short notch in
fence + 3 ft. from path.

no. 5164. *Eschscholtzia calif.*



wire spike



" "

These spikes of
old (1911)
setting show as
straw-colored fl.
plants and are
opposite post 16.
Counting from the
Davis roadway
and not counting
the first or
white washed post.

They are on the bank within 2 ft.
of path. and I have set up
a r.r. coupling pin opp.
them, 2 ft. nearer fence n.

On the sheets these two are
marked post 9 and the count-
was from ?? look up.

- "What is that lily that grows along streams, on the McCloud & Squaw Creek," asks Judge Platt. "Single leaf; you know it, lots of it! Just one big leaf. Oh, you know." = *Saxifraga peltata*! He says the fishermen call it "Water Lily," evidently because of its great single leaf, like some "water lilies."
- No. 5166, *Galycanthus* ~~acid.~~
Weldon Cañon, $\frac{1}{4}$ mile from
Vacaville Road.

No. 5165. *Eschscholzia*
cal. show-col autumn form
taken from area of marked
plants but not from marked
plants; along r.r. near Davis
ranch.

No. 5166. see above.

- Judge Platt, my old-time companion on botanical trips is a picturesque character. All the portugese, chinese, germans, italians, hindus, japs and mexicans come to him with their troubles. He has lately been forcing the S.P. Co. and North-German Lloyd ^{S.S. Co.} to discharge passage money advanced and not used. Poor Spanish settlers have sent the companies money to bring out their ² relatives in Spain but the relatives for some reason were not allowed by the laws ^{of Spain} to come. The companies simply held onto the money until Platt took hold. The N. G. Lloyd is the more refractory and Platt now appeals to the R. R. Com. of Cal. which is quite on top at present. The letters Platt wrote re "the brigands" were highly forceful & spicy.

Cultivated plants.

Oct. 5, 1912.

- Visited Golden Gate Park conserv.
The Nyctaginaceous *Bougainvillea glabra*
& *latifolia* in handsome fl. with their 3
pink bracts. *Hibiscus rosa sinensis* is a
very fine flowering thing. *Strelitzia reginae*
is in fl. (But of Paradise Flower). *Quisqualis*
indica (Combretaceae). Also a palm with
fl. & fr. panicle on trunk far below leafy
crown. *Monstera deliciosa*.

- *Cressa cretica*! Madeline Plains

Dr. Loughbridge, 1912

- *Abies magnifica* ^{photos sent by F. W. Woods} 2000 Cal. St. S. F.

of a tree near Lake Tahoe, 119 ft.

h., 13.44 ft. diam. at ground,

8.47 ft. diam. at about 5 ft.

- See U.C. hb. on box material.

- *Lupinus chamissonis* ^{no. 1} and
L. tidestromii ^{no. 2} from Pac. Grove.
Keep one sheet of each.

No. 1. Upper portion of keel ciliate

No. 2 " " " " "

No. 1. Upper calyx lobe divergent
and deeply 2-toothed.no. 2. Ditto, possibly teeth a trifle more
divergent.

no. 1. Lower lobe obscurely 3-denticulate

no. 2 " " " "

no. 2. Keel seems a trifle more sharply
bent upward than in no. 1.Other wise the two seem exactly
alike, in all particulars.

- Burdett, J. W. He was a keen-
eyed collector as shown by his
picking up unusual things:

Salicornia herbacea at "Embarca-

dero, Palo Alto, Aug. 1897" (in

U.C. hb.). Also cf. *Allocarya vestita*

Greene at Catalina, 1880.

- Shochley, W. H. See p. 171 infra.

- Parry, B. B.; Gray, A. A.; Muir, John, of
Letter File sub Anderson, 1912.

- Anderson, Dr. C. L. cf. *Zoë*, 4:358

2; 217. Cf. also. Santa Cruz

Surf, July 10, 1908, "Dr. C. L. Anderson

- An Appreciation."

20 Berkeley to Barstow

Localities on Colorado River

Needles, Doudville (A), Beale,
Mellen (A), The Needles, Mohave
Rock, Chemunavis, Liverpool Ldg.,
Steamboat Rock, Aubrey Ldg, Eagle
Ldg (all A), Monument Peak,
Parker (A), Indian Agency (A),
Riverride Mt., Arroyo La Paz (A),
Palo Verde, Hodges Ldg, Cibola (A),
Cibola Valley (A), Lighthouse Rock (A),
Picacho, Picacho Peak, Castle Dome
Ldg (A), Laguna Reservoir (A), Pot-
holes (A) Bard, Yuma (A).

Screw-bean.

Screw-bean
- Mesquite (*Prosopis pubescens*).

Furnishes a good honey but the season is short. The bee leaves in June, flowers in July and now the leaves are nearly to their maximum of fall. It is a good index to our season.

- One is never prepared for rain in the desert says Miss Waterman. This sounds like a paradoxical statement but it is true. The heavy rain of 10 days ago beat down her alfalfa so as to interfere with making the harvest. But at the dry digging at Coolgardie, the rain was also unwelcome as it interfered with the gold process. Mr. Heermis of Coolgardie was quite disgusted with the rain.

- *Cassia* no. 1, Horned.
will this year for first time in several years.
Picacho.

- Mrs. Ferguson, wife of the school teacher who got sick; she taught the school and supported the family, 3 children, until her husband deserted her and went to Maunula. Pamela Emmeline Morrison = maiden name. cont. p. 38.

- Mrs. Sam Wilson, dance-hall girl
in mining camp, married Sam Wilson,
worst sort - there is full breastedness
in love with him, made of herself a
fine woman & made a decent man of Sam

2100 ft

- ✓ No. 5166. *Gutierrezia microcephala* (Gray) ~~Chrysothamnus~~
Plants height shown by stem.

Bushy form. Heads of 2 fls only, one disk! and one ray! Styles long-cylindric, short hairy with spreading hairs.

- ✓ No. 5167. *Sphaeralcea ambigua* Gray. ^{Wash.}
Many such stems from the base. It is a switch plant at this season. Wash.

- ✓ No. 5168. *Lepidospartum squamatum* (Gray) Gray
^{green} Composite. Shrub 6 ft. h., many stemmed freely branched. Remarkable for its green leafless twigs and its cedar-like aspect. Wash.

- nauscosus* var. *enaphalodes*
✓ No. 5169. *Chrysothamnus* (Greene) Hall
Gray or white Composite. Fls. 4 or 5, much exserted beyond involucre, spreading or rather diverging.
3-4 ft. h. Wash.

- Miss Walerman of the Walerman Ranch is trying to buy a portion of the river bottom lying south of here which contains a fine mesquite grove. The valley would be for wood but also and principally as browse-pasture for her cattle. I have been out driving with her on the mesa behind the blacks and it is a fine thing to come down into the mesquite. I remarked: "The mesquite is your forest." It is the forest of the desert.

- ✓ No. 5170. *Rhipsalis confertifolia*.
Flowering heavily now. The little round shrubs 1 to 2 ft. high covered with the flowering spikes

which are often a very beautiful red-brown, as if autumnal coloration. Mesas as well as flats, but char. ^{Atriplex} especially mesas.

No. 5171. *Atriplex canescens*.

3 ft. h. Flats or washes.

No. 5171a. " var. *laciniata*.

No. 5172. *Chrysothamnus paniculatus* (Gray) Hall

Tufted composite, shrub 4 or 5 ft. h., the foliage tufted at ends of long erect cane-like stems several from base & branching mostly at top. Wash

No. 5173. *Atriplex polycarpa*
2 ft. h. Very spiny-twiggy. Dioecious.

No. 5173a.

Plants

No. 5174. *Atriplex torreyi*. 10+9
filling the Mohave River bed for miles as at the Waterman Ranch, ^{shrub} 2 to 5 ft. h., densely & intricately branched. The plants are rather spiny, the lateral axes of flowering panicles form the spines below the next season.

No. 5175. *Dicoria canescens* B. & G.

Loosely branched from base, Camp. with gray foliage now dried up but still persisting.

4 roundish short bracts to involucre; 1 or 2 much inflated thin bracts enclosing 4 fls or 5 with 5-lobed thin whitish corolla and a staminal column bearing 5 distinct anthers. Outside these 4 fls. are 1 or 2 flowers without corolla consisting of an ovary with flat face —
cont. p. 32

2100 ft.

- No. 5176. *Lesquingia germanorum*
var. *ramulosissima* (A. Nels.)
J. T. Howell
Corollas irregular, as if 2-
lipped, 3 lobes in lower
lip, 2 upper lobes horiz-
ontally spreading. Comp.

Rich sandy soil, borders wash. Odor
strong like *Calceolaria*

- No. 5177. *Butterfretia microcephala*
C. D. Gray
Composite with few fls. to head.

Wash. Heads 2-flowered,
usually with 1 fl. reduced-radiate!

- No. 5178. *Chrysothamnus*
see p. 28. cont. *planifolius*
Trunks often 3 in. diam. ^{at most} 4 to 6 ft. h.
Comp. gone to seed
Trunk at base, 3 in. through
several-stemmed. Washes!

Stems branching mostly ^{or} tufted at top,
erect & spreading, Chamisaal type, of

- No. 5179. *Lepidospartum squamatum* (Gray) Gray
Heads 11 or 12-flowered.
Cedar-like Comp. 4 to 5½ ft.

high. Several-stemmed, the
stems at 4 in. from ground
often 6 in. circumference! The

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non-flowering or bearing branchlets,
(i.e. foliage-functioning) are
fasciated or bunchy and
very "cedar"-like, i.e. cypress-
like. Corolla-lobes recurved,
the flowers rather ^{rather long,} horizontally
diverging or tending to diverge
from head, the poll. apparatus
long exserted, the stigmatic
branches obscurely pubescent.
Odor strongly camiferous, taste
also, with something else back
of it, a strong astringency. Washes.
Bush of the erect-spreading
Chamisaal type; rather open.
- *Yucca arborescens*, 12 to 18
ft. high, up to 5 ft 6 in. circ.
at 4 ft. Mr. Heermis of Coolgardie
says their roots are very fine
and all near the surface. I
spoke of one as having "turned

down its toes" and Miss W. tells me that Heermis remarks that they die very slowly. The desert chipmunks take all the ripe seed as soon as the pods are ripe. It is impossible to get seed after a certain time. Probably the seeds are ripe in July as the pods were full-grown when I was here in June.

No. 5178. cont. from p. 26.

Flowers 5 (or 6) to head. Corolla lobes short. Style branches short hairy. Very abundant in the washes, mostly 5 or 6 ft. h. Herbaceous parts whitish or grayish with a scurfy covering.

pleniradiata Cov.

- ✓ No. 5180. *Baileya multiradiata* var. ^{back of wash.} Rays many, in 2 or 3 series, yellow, turning straw-color in age and deflexed all around. Rays 26 (1 count), clear lemon-yellow! Corollas glandular-pubescent, pubescent-tufted! on back of lobes! — *Petalostemum thurberi*, past fruiting! Mesa near Barstow.

- ✓ No. 5181. *Erysimum asperum* DC. Crucifer in fruit. Rich sandy slopes.

- ✓ No. 5182. *Erysimum asperum* DC. with preced. Rosettes flat on ground, the leaves with the char. mustard pungency!! Followed quickly by a stringy taste.
bitter

2100 ft.

- No. 5183. *Lycium andersonii* Gray.
Leaves thick (or bulbous) fleshy,
full of water, + greenish
watery when smashed.
Intricately branched, the
branches with series of
spines; $\frac{1}{2}$ to $2\frac{1}{2}$ ft. h.

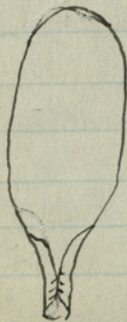
- No. 5184. *Oenothera trichocalyx* Nutt.
Proliferous branches from base
eventually curving over
central spike, their tips
approximating and forming
a sort of hanging basket
effect. Rich sandy slope
2300 ft.

- No. 5185. *Oenothera primivris* Gray.
Forming when dead dry and
woody pine-cone-like structures
on the surface of the sand

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their lower part partly buried
in sand. with preced.

- No. 5186. *Glennella obtusifolia* ^{Donn. & Horn}
Stink weed at Barstow. Cor.
Bright lemon-yellow ^{or pale orange}, 2 petals
erect on upper side flower, the
other two petals right and left,
the lower part of circle of fl. vacant.
Two upper petals with their
narrowed base with revolute
margins, so revolute as to
make a tubular structure, so:-



a very rough sketch.
The edges of the
revolute portion are
distinctly serrulate!!
The plants have

2100 ft.

stems $\frac{1}{2}$ to 3 ft. long, trailing over the ground with ascending branchlets. - Rich low lands. Doves feed on the seeds.

- no. 5175 cont. from p. 25 -

and rounded or convex back, the thin margin toothed with heavy teeth on each side, the styles 2 and long. Where there are 2 inflated bracts, and these are usually 2, there are two female fls.; ^{but if} one inflated bract, then 1 ♀ fl. These inflated bracts subtend each an achene. From the centre of the cluster of ♂ fls. arises one long slender bract which is greenish ^{at tip} and surpasses the corollas. One of the inflated bracts is

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commonly much larger than other. It often encloses the other. There are usually 2 such bracts. River bed, Mohave River.

penicillus douglasii DC.

no. 5187. *Chrysothamnus*

Raye golden yellow; 13, 13, 12, 13; very long. River bed of Mohave.

- *Petalonyx thurberi*, plants 10 to 20 in. h., 1 to 4 ft. broad
- River bed, Mohave.
Sandy

(Müll. Arg. var. *mohavensis* Fong.)

- no. 5188. *Graton californicus*
Dove-used. The doves blend right in with the color of the bush when feeding on the seeds. Stigmas 3, flabelli-

form, each deeply cleft into 4 linear segments, 1 or 2 of these being again cleft or toothed at apex.

Haploporopsis acrademius
✓ No. 5189. *Charybdomus* ~~and~~ *Greenet*
Mohave River bed. 1½ ft. H. Blake

✓ No. 5190. *Atriplex phyllostegia*
very fleshy.

— Mrs. Hart lives alone in the river near Milpitas. She had a no account husband who made a precarious living by selling salted mines, a profession at which he had some skill. But he was caught at it finally and convicted. Then the boy grew up and one day word was brought to Mrs. Hart that John had been arrested for salting a mine. Mrs. Hart looked up a moment from beneath her sunbonnet and said, "Clip of the old block" and went on living. Mrs. Hart's nearest neighbor is 20 miles away. Such is another of the characters well known along the Colorado River.

— Mrs. Sam Wilson. Her maiden name Miss Waterman did not tell me. But she had been as "bad" as they make them in the dance halls of the mining camps reached via the muddy stream of the Colorado. But she fell in love with Sam. She fell in love with him! It was a wonderful thing. Sam was utterly no account. He had the saloon & general store at Ehrenberg and she took hold & helped him. She began a new life. She made people respect her and she made people respect her husband. He was not Sam Wilson to her but Samuel Wilson; and she made him Samuel Wilson to others. Such is the mighty power of love. One day a fresh character from one of the mining

campers brushed into the store and saluting her said: "How is Sister Wilson?" She drew herself together and gave him a cold steady look with the inquiry: "Can I do anything for you?" After that he called her Mrs. Wilson. Sam of course, being worthless got into financial trouble and his creditors foreclosed on him. But Mrs. Wilson was beforehand with them. She had had the property, the hotel, the store and the saloon put into her hands, and she went to work, made a success of the businesses, paid off Wilson's debts, and then put the property back into his hands. When Pedro Sanguinetti at Yuma heard of it: "Dad

blast- the fool woman (only the language was stranger than that) she has deeded it all over to Sam."! But that was a part of her idealism of Sam. It did violence to her great romance to think of doing otherwise. Sam was pretty good to her but dreadfully jealous; never allowed her to go anywhere. However he allowed her to go ^{now} to La Paz on a Sunday with Miss Waterman for a holiday. He counted this an honor, that his wife should be noticed by the daughter of a Governor of California. And so they went holidaying to La Paz, altho Sam reckoned it would be dreadful hard for him, it being Sunday and all the Indians come to town on that day.

- Ludlow is a little village, a r.r. junction that would serve as a stopping place or center for botanical trips.

- Cut from p. 21. After Mrs. P.'s husband remarried she kept the little store and the p.o. She had a hard time but she worked like blazes to turn a penny in any seed every way. Her kitchen was right off the p.o. and she would bake bread and sell it to anyone that came along. Then the small pox came through that country. It was a mild form but it was small pox. The Mexicans always have it. The mining company's store was right across the way and would like to run

her out. Had they known the small pox was there they would have closed her up. As her debts were still heavy this would have ruined her. So she sat tight, when her children came down with small pox, kept them in a house in the yard, disinfected herself every time she went into the store or p.o. Then when the children pulled through she burnt up everything connected with the disease and disinfected thoroughly. She had not done this 2 full days when inspectors came and charged her with having small pox on the premises. She denied it and proposed that they investigate which they did. They went away puzzled but she was victorious. Through

this trial the mexicans stood by her. All of them had a great liking for her. Until she was ordered not to do so, she taught the children their own language in the school. It re-vivified the school. The interest was very great. The parents for the first time took the liveliest interest in the school and made the children go to school. The children themselves took interest in learning English as a result of learning Spanish. It meant a great deal to the community as the children were all Mexican except the teacher's own children. When the Spanish was ordered out the interest and attendance

fell away. She is a brave courageous cheery woman this Mrs. Ferguson and is one of the characters along the Colorado River.

- Arrived at Needles at 7:35 where I was met by James Rennie. Tomorrow we are to get ready for the trip down the Colorado River. Rennie got in last night. This morning he wandered around and made acquaintances in view of immediate main-^{tenance} around, to purchase a boat. He was referred to Sweeney, the riverman. He found Sweeney talking with a group of men along shore. He told him what was

waited in the way of a boat but Sweeney made an indifferent answer and went on talking with the men.

Rennie waited around and listened to their talk and stories. After a time Sweeney jumped up and said to

Rennie: Well let's go up the river and look for a boat. They found an Indian who had a boat for sale at \$15⁰⁰, a very reasonable price; indeed a cheap price since it had 80 feet of rope and two pairs of oars, one pair being hardwood. We have given the best pair of oars to Sweeney for his trouble and he is much pleased. He would

not accept any money. The light pair of oars will easily last us as far as Yuma and they are easier to handle on our trip.

The Colorado* is a wonderfully powerful and uneasy river. It is eating away its banks here and building up banks there on its flood plain. A long string of Mexicans waded in the margin of the river pulling on a long rope which towed a barge laden with small trees and brush up the river near the smelter where the banks are being rip-rapped. The main current is deep but it is difficult to follow the main current accurately.

* Cf. A.B. 29:99.

and the oars continually find bottom. While in the current the water takes the boat rapidly along without rowing. The banks of the river lowlands are of the finest clearest most

perfectly cleansed and "valted" loam. It is wonderful. One of the first plants to take possession of this lowest bench is ^(Pluchea) the arrow-weed (*Tissaria borealis*). Then follow the Cottonwood (*Populus fremontii*) and Black willow (*Salix nigra*). A great grove of these fills the east lowlands soon after leaving Needles, trees 20 to 40 feet high, very

slender because standing very thickly, the Cottonwoods topping the Black willow (20 to 30 ft. h. mostly). The Black willow branches 3 or 4 in. diam. at 4 ft. Then the river buries the branch 4 ft. deep in silt. Next the river is cutting away this grove, undermining it and the trees fall into the river. In other places long level flats form a bench 3 to 10 feet above river water is being undermined. The water rushes very rapidly and the great masses of earth fall into the river in rather quick succession, splitting down vertically, and making a sharp report

when they fall. There is so much of it - and it is so impressive that we call it the river artillery. The "powder" is the soft smooth "creamy" earth that would be worth millions if reclaimed. And it will also be reclaimed some day. These are too vast and choking riches of earth and water to go to waste indefinitely. The river will be piled, rip-rapped and sand bogged. The waters will be th dammed, stored, diverted, fed off slowly and then this great region will furnish the breeding spot for another civilization &

match the Nile or the Mesopotamia of old. The day - today - is perfect. It was made to order. It is glorious, soft; balmy, sunshiny. We float down the current, the Sacramento R. in the west; the N. in the east. Under the river cuts a ^{sharp} pass through the purple Mohaves! This is romance!

Left Needles, 9:45 am. camped below Mellen on left bank at 3.15.

Left camp next am. at 10.70
Reached at next camp at 3.30

- Sagger-head Cactus. First seen at Mellen. One 3 ft. high had 28 ribs. A small one 16 ribs.

- No. 5191. *Cyperus* ~~strigosus~~ ^{terax Rich}
River bench near Needles. San Bernardino Co. Cal.
- No. 5192. *Ammania coccinea* Robt.
River bench near Needles
- No. 5193. *Corispermum* ^{with preced.}
marginatum Rydb.
- Bought on groceries of the Needles Cooperative Store. They have a fine fresh stock and do a business of \$12,000⁰⁰ per mo!
(*Prosopis juliflora*)
- Mesquite: (a useful tree says Rennie, a common resource for posts in the Palo Verde valley. Beans excellent feed for horses for cattle the meat is white and "awfully good". The Indians gather the beans and sell them at 25 cents a sack to the settlers. The Indians go down in the overflowed lands when they are thick on the ground

and harvest them. The Palo Verde tree is not good for much, especially as compared with the Mesquite, Screwbean and Ironwood.

- Desert blacksmith put a wavy or undulate wedge into their axe heads stools. Such a wedge will keep a head tight in the dry desert air when nothing else will.

- Our boat, The Lotus, is 17 ft. long and 4 ft. 9 in (at the stern) broad.

- No. 5194. *Euphorbia polycarpa* Benth.
^{approaching var. *hirtella* Boiss.}
Perennial. Rocky river cliffs

- No. 5195. *Phoradendron californicum* Nutt.
On mesquite (*Prosopis juliflora*)
often kills the mesquite - or hastens its death. Mellenitz.
Colorado River.

- No. 5202. See p. 55
Crup. branching shrub 2 1/4 ft. h

50 Colorado River, ^{Mohave Co.} Mellen, Ariz.,
425 ft

- No. 5196. *Atriplex polycarpa*
Freely branching bush 2 to
3 ft. h., heavily loaded with
fruit. - Mellen.
- No. 5197. *Atriplex lentiformis*.
widely branching bush, 4 to 8 (or 10)
ft. h. Fruits dull white or
lavender. The lavender
bushes "show up" some distance
and are very beautiful. The
bracts are united above the
middle, the free portion with-
irregular margin. The lower
branches spread out & touch the
ground.
- No. 5198. *Salix nigra* ^{Chenuevis Valley, Ariz.}
^{Beetles on}
^{leaves. See p. 163}
Chenuevis Valley. ^{Allenroffer}
- No. 5199. *Sprostachys occi-*
dentalis, 2 to 4 ft. high.
Abundant on a flat above
the river bottom - Chenuevis
Valley.

^{sh} to Chenuevis Valley, 23 Oct. 51

[= San Bernardino Co. when on Cal. shore.] 1912

- No. 5200. *Lycium andersonii* Gray.
Very divaricately branched shrub
thorny, 2 to 5 (or 8) ft. h. On a
flat above river bottom, Chen-
uevis Valley, Rennie says
settlers call this Squaw
Bush because ~~the~~ squaws
gather the red berries for food.
This bush is considered a sign
of high class loam soil. (Round
bush shrubs 4 ft. h. densely & intri-
cately branched - Wash. Brannan Edg.)
- No. 5201. *Encelia farinosa*
Dry hills (small leaved spm.)
and wash (large leaved spm.) Mellen.
- This morning at 10.10 we
pushed the Lotus off her
mooring at the bank and
soon went swiftly amongst
The Needles, the high sharp
peaks of which rose high
on either side and gave

the scene a fine setting. The walls were abrupt from the water's edge and often rather high. The Colorado moved with steady even force between these walls, without rapids, altho' with some choppy waves in one place just before entering the narrows where we pulled to the east shore and kept in quiet water. The ever changing view, as the river wound along, of the high chimneys, peaks and irregular crests took our full attention. We had little time to watch the swirls, eddies and contradictory movements of the mass of water which carried us smoothly

425 ft.

along, now in midstream, now grazing some great rock by the shore. The coloration of the rocks in several places was very fine, especially on the northward walls of a wash which entered the Colorado on the west about $3\frac{1}{2}$ miles above Mohave Rock and a mile below Mohave Wash. Mohave Rock is a fine rock standing up on end as it were and putting boldly into the water, ^{i.e. the stream} and quite isolated from other rocky masses.

Then we come into lower Laramie country, leaving behind the Chumbeis & Mohave Mountains on the west side of the river. We see again the fine soil of

24 October 1912

the lowlands, soft and fluffy, revealing every line in your fingers as you press it between forefinger and thumb, like talcum powder; this soil has been ground and bolted. It has been picked up and laid down a hundred times, each time diffused in water and then precipitated as fine as dust.

- *Populus fremontii*. An important tree economically along the Colorado River. Used for timbers in construction of buildings as in a hotel at Blythe. Used especially in this region as ^{decking} for bridges; as such it wears well. No better lumber for box lumber says Kenne who also

says it is standard stock for excellence, a factory at Sacramento at one time manufacturing it.

- The river is full of noises, and of many different kinds, roaring, ripples, sawings or groanings. The river works, boils, eddies, bubbles, surges, whirlpools, and seems to fight with itself and its bed. Across a long straight stretch of water (we have had such 3 or 4 miles long) the roaring of the water around a brush pile tangled on the bottom can be heard a mile.

Also p. 49

No. 5202. *Encelia farinosa*. See p. 61.
boup. 5202. coll. near Steamboat Rock.
= *P. glandulosa* var. *torreyana*.
No. 5203. *Prosopis glandulosa* (Julyflora)
8-12 ft. tall.

(= San Bernardino Co. when in Cal.)
 Mohave Co. in Arizona

- *Spirostachys occidentalis*.

Fine formation of it in alkali
 runs flat at or a little below Blauken-
 ship Valley, Ariz. shore.

Picture taken by Rennie of a
 bush 5 ft. h. + 8 ft. diam.

Many-stemmed from base,
 the stems 1 or 2 in. diam at
 1 ft. New shoots rise up
 in centre of flower first season,
 then next season bud on
 + flower again, the long
 branches finally with ends
 sprawling on ground, as
 if heavily loaded. The wood
 is very brittle, both young
 and old stems 1 in. diam.

In the photo also show
 Mesquite (*Prosopis juliflora*)
 and *Atriplex lentiformis*.

- No. 5204. *Pluchea sericea* Lam.

Arrow-wood. 4-6 ft. h. here.

- No. 5205. Grass. *Cakrila dactylon*

truxillensis HBK

No. 5206. *Bressa orbica* L.

Corolla dull white, the ovate
 acute lobes with pink tips;
 stamens 5, alt. with cor.
 lobes, included ($\frac{1}{2}$ as long as
 tube); ovary seated on yellow-
 ish disk or flat torus, very
 long hairy; styles 2. Sepals distinct,
 overlapping strongly, concave
 inside. (Just below Blauken-
 ship Valley on Ariz. shore, i.e. part of the
 great Chemehuevi Valley.) See p. 149.

No. 5207. *Atis* ^{Switch plant.} *spinosa* Gray acc. S.B.P.

Comp.* 3 ft. h. + 3 or 4 ft. broad.

No. 5208. *Salix* ^{Ray white, 1 1/2 lines} *flavotrilobata*? ^{exiguus Nutt.} See p. 137.

Gray willow 8 to 10 ft. h. ^{See p. 137.} *Becomes* ^{See p. 80.} *20 ft. h.!* ^{See p. 163.}

- *Larrea mexicana*.

In this country and in the Chucks-
 walla this species is called
 Greasewood. The Greasewood of
 this country is universally
Larrea. In the Chucksawalla they
 clear the land of it by cutting
 * of S.B. Parish in litt. 3/28/13

a beam and chain to the base of it and "yanking" it right out.

- Left settlers' landing at Chumawis Valley at 10:20 am.
- Ferguson is the name of the head man at the government dam at Laguna.
- Hall's Landing. Hall has been here 36 years. He says coyotes, bobcats and skunks are "thick and fat." They feed on the sweet mesquite pods as do also the quail. Hall calls Mellen by the name of Topock (Topogh?). He has lived here 36 years; built his adobe house in 1884. The house is made of willow trunk

standards, willow branch lath nailed on round, and plastered with mud. The roof is similar but the "lath" is covered with canvas, then "fule", then mud.

- Burro, the poor man's auto in the desert. It lives on Atriplex and related ^{These form its feeding shrubs.}
 - The current carries along as in a mill race. The river stretches straight far ahead bordered by a bank of Black willow (*Salix nigra*). On the high-banked opposite shore are Indians sitting beneath the trees near their dwellings. The sun drenches the whole world from a fleckless sky. Purple and drab-colored mountains stretch to right & left. Behind, far, are the Needles; ahead straight the Volupble Mts.
- * Cottonwood willow, like a Corset picture

- none of the settlers attempt to take a boat up the river. When a boat goes down the river that is the last of it.
- The Black willow* rip-rope** the bank splendidly but a quarter-mile has been taken out in one place^{here} exposing the fine depth of soil. The Arrow-weed (*Tessaria borealis*) back of the willow bank shows thus that it has been silted up 2 or 3 ft. After a bank's protective covering is gone the water just melts this fine soil away. Its quality is shown by this melting.

* *Salix nigra*

** natural growth

- *Larrea mexicana*. On hills by the river a little below Pittsburg Flat the *Larrea* is so spaced that the appearance is that of an orchard, there being only the one species.
- The vegetation on the hills about the Whipple Mts consists mainly of dark spots (*Larrea mexicana*) and white spots (*Eucleia farinosa*, no. 5202). The latter has whitish-brown branches + gray-green leaves, the whole bush looking white at a little distance. Corymbs 2 or 3-headed, borne on a long terminal peduncle. Branching regularly from base dichotomous fashion, mostly ²⁰⁻²⁴ 24 to 27 in. high, as broad or broader. Cattle browse it, probably taking only the dead flowering peduncles.

✓ no. 5209. *Amaranthus palmeri*
Flat, Chemehuevis Valley. Stems
crimson! or whitish.

✓ no. 5210. *Salina meklorides*
2 ft. h. Chemehuevis Val.

✓ no. 5211. *Prosopis glandulosa* var. *torreyana* (gray-flora)
(Cree). Little Chemehuevis Val.
in wash.

- The great bankfinders against
the night of the river are
Salix nigra and *Salix fluviatilis*?
= no. 5208; the latter is a gray
willow with yellow bark. It occu-
pies the inner or river side of
the bank and forms a dense
zone, often topped behind by the
Black Willow which is taller and
light green in color. Often the
latter is alone on the bank. These
are the only 2 willows here.

✓ no. 5212. Smokebush. 14 ft. h.
Cercocarpus spiroga Hal.
and 6 in. diam. at 1 ft.

Wash. *Dalea spiroga*. Gray-
looking, easy to pass as if dead. Every
branch & branchlet ends in a spine!

✓ no. 5213. *Acacia greggii*
7 ft. h. and 10 ft. diam.

One tree with claws so thick on
it that I could not go near it
without getting caught in half-a-
dozen places before knowing it; the
other bushy without claws.

- Palo Verde, photo. by Reunis,
18 ft. h. + 19 in. diam at ground.
These trees are in full foliage

✓ no. 5214. *Aster canescens* Pursh. var. *leptoroides*
Gray. acc. 58 P.
Asteroid, blue rays. Ray 27, 28.

Plants bushy branching,
2 to 3 ft. h. - Little Chemehuevis Val.

✓ no. 5215. *Atriplex polycarpa*.
Larger-fruited than no. 5196.
Little Chemehuevis Val.

San Bernardino Co. Whipple Mts.

- Went into camp on a sand-trail below Steamboat Rock at 5:30 p.m.

✓ No. 5216. *Suaeda* ^{*S. fruticosa*} *moquini*.
3 ft. h. Little Chermuevis Val.
Straggling.

✓ No. 5217. *Atriplex lentiiformis*
2 ft. h. but not fl. or fr.

No. 5218.

Camp. forming a dense bush with many stems, 4 ft. h! + 8 ft. broad! Wash, Little Chermuevis Valley.

✓ No. 5219. *Baccharis glutinosa*
Straight tall stems, 8 to 10 ft. h. ^(Plants diffusely branching, 1 to 3 ft. broad.)

✓ No. 5220. *Physalis crassifolia* ^{3 ft. h.} See p. 65.
Corolla recurving limb, pale egg-yellow.
Prob. open only in morning or at
east not in mid-day, no!

Steamboat Rock

(*Prosopis juliflora*)
- Mesquite/cobles, exposed by river washing, 10 to 20 feet long and $\frac{3}{4}$ to 1 inch thick for their length.

- "Sailed" this morning (Oct. 25) from the camp below Steamboat Rock, 8:30.

✓ No. 5220. Cont. Corolla ^{from p. 64.} $\frac{1}{2}$ inch broad about. Stamens 5. Calyx-tube short-cylindric, acutely 5-toothed, highly inflated in fruit and enclosing a capsule-like fruit about the size of a pea which is now greenish and very glandular, sticky but doubtless becomes ^{annual?} annual later on. Root, about $\frac{1}{2}$ in. diam. deep-seated. Corolla tube short, not produced beyond calyx, with hairy scales at summit. 3 tube, one opposite each lobe. Wash

see page 146

Braunaria Landing <sup>(Whipple Mts. San Bernar-
dino Co.)</sup>
Colorado River

- Cat Claw, *Acacia greggii*, is surely well-named. One cannot go or pass near it - but that it seizes your clothing and the sensation is very like that of a cat's claws. Branches characteristically very long

✓ No. 5221 *Hofmeisteria* ^{and slender.} *plurisetia*

Comp. bush 18 in. h. + 3 ft. broad on face rock wall.

See Parish in litt. Mar. 28, '13 as "5222"

✓ No. 5222. *Hyptis emoryi* Torr
Many-stemmed bush 6 to 10 ft., the stems straight, slender, tall. Wash. Cont.
p. 67. (*Prosopis juliflora*)

- Mesquite, with its sweet nutritious pods, a desert tree known to prospectors who may scarcely know the name of any other desert

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bush, is to be compared to the St. John's Bread Tree and similar species of Palestine.

No. 5224.

Parkinsonia microphylla.

- Palo Verde, pale yellow tree, as if bursting into green in spring just one tree 20 ft. h. with

three trunks from base 10 or 11 in diam. at ground. ^{no. 5223,} ^{green.} bark yellow.

- *Olneya tesota*, blue-green foliage, one tree 45 ft. h.

2 ft. diam. at ground.

Leaflets 4 or 5 pairs, elliptic.

No. 5222. Cont. Corolla pale blue, its lips spreading above the calyx, its tube not exerted. Upper cor. lip cleft, the lobes with approximate-recurring tips. Lateral lobes lip quadrangular in general outline but with rounded apex (that the lips short, broad + with parallel sides);

middle lobe (lower lip) ^{at base} with a trans-
verse crest the limb below
round-expanded and its edges
so folded as to make a
sac-like structure with the
opening just below the

transverse crest. Stamens 4; file
short hairy, ^{poll} intravase to tube a
rounded opening ^{above} stamens formed.

- Braunian place, a quartz
will being put up by Young
Hull.

- At Steamboat Rock we are
still in sight of the
Chumchuensis Range. From
our camp $\frac{1}{2}$ mile down river
the Range this morning appears
a drab or dusty color although
last night they were purple.
Some of the desert ranges are
so ^{dark or} black in color of their rock
that they look purple nearer
than the dusty ranges. The

"purple" is an atmospheric effect
of certain times of day or of winds.
The purple of the chaparral-covered
ranges is a different matter and
is a constant quantity.

- Atriplex. Salt bush. This genus
being the dominant genus of
Chenopodiaceae with us the
common name right, for the
family, to be Salt-bush Family
and not Goosefoot Fam. which
is not intelligible to our people.

As the common names are not
governed by rules the name
of a family ought always to be
taken from the dominant
genus with us.

- On our night below Steamboat
we have for a long distance a
fine view of the Whipple Mts. which
form bold ragged isolated
masses, very distinct, one of

- them being Monument Peak.
 - Just below Murray Flat
 we passed *Salix nigra* bank
 grove whose banks had been
 buried 8 ft. by silt!
 - We pass the mouth of
 Bill Williams with its
 high table land ^{of a mountain} on the
 south, falling off ^{on its north side} into
 picturesque vertical bluffs
 to the river valley. Opposite
 on the Col. shore, Remi
 sees an Octillo, and
 a little below I shot a
 Monument Cactus on the
 west shore also. The river, im-
 mediately south of Bill
 Williams Fork, starts
 through a mountain pass
 with abrupt rocky walls.

Opposite
 Whipple Mts.
 in San Bernar-
 dino Co.

25 Oct. 1912.

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- *Acacia greggii*. Pinnal 2 or 3 pairs;
 leaflets 4 or 5 pairs to each pinnal,
 elliptic-oblong.

✓ No. 5223. *Olneya tesota* Gray.
 From tree described on p. 67.

✓ No. 5224. *Parkinsonia microphylla*
 From tree described on p. 67. ^{Torr}

No. 5224a. *Parkinsonia torreyana*.
 (*Cercidium Torreyanum* Bary.)

✓ No. 5225. *Atriplex canescens*.
 Shrubs 3 ft. h., very heavily
 loaded with the fruiting spikes,
 the spikes far more prominent
 than any other part of the shrubs.
 the foliage by comparison
 insignificant.

- *Parkinsonia torreyana* ^{and} *microphylla*
^{are} now becoming more frequent on the
 dry hills, spotting with a light

green the critical hills. It is a curious green, all given by its bark, a sort of mouldy green scum-like.

- Left camp below Bill Williams's Park at 7:40 ^{am. this morning.} Went into camp yesterday at 2:00 pm.

- Parsons Wild Fls. Cal. Reunite says the hand-col. ed. sells for \$25⁰⁰.

- The river stretches at sunset, shining and peaceful but carrying us smoothly along. The great desolate ranges march up to the water's edge; the monument cactus keeps vigil on the giant hills; from the brush clump on the mesa flats the quail's call vibrates through the morning air.

- *Populus fremontii*, average stand, below Parker, bal. shore, 45-50 ft. h., one tree 15 in. diam. at 4 ft (average tree). See photo.

Species of the Washes.

- *Atriplex polycarpa*, common
- *Suaeda torreyana* (no. 5216) ..
- *Prosopis juliflora* (^{var.} glandulosa) ..
- *Atriplex lentiformis*, fairly "
- *Lycium andersonii* (no. 5200) "
- *Acacia greggii*
- *Prosopis pubescens*
- *Olneya tesota* - Whipple Mts. and south.

✓ No. 5226. *Distichlis spicata* (L.) Greene
grass, bank binder. Bill Wm's
Park. ARIZONA

✓ No. 5227. *Pluchea sericea* Cov.
Arrowweed. With-piced, but on mesa.

✓ No. 5228. *Mammillaria dioica* K. Bdg.

Small "involvy" cactus, whole plant taken. Flesh yellowish

Colorado River, opp. Gila
Basin.✓ No. 5229. *Echinocactus acanthodes* Lem.

Nigger-head Cactus. Ribs 24.

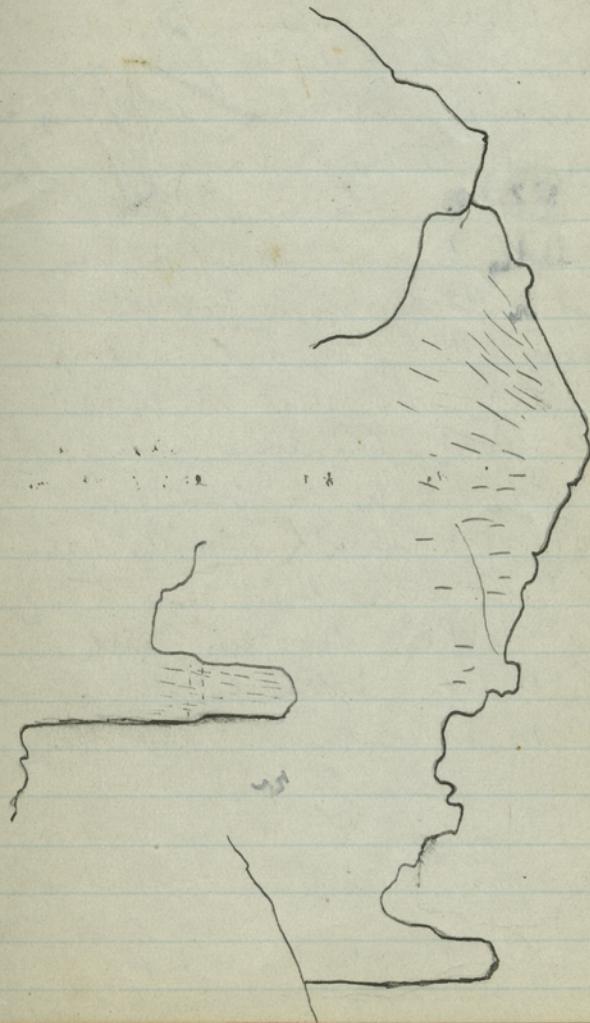
2 1/4 ft. h.

✓ No. 5230. *Opuntia acanthocarpa* Engelm.
+ Bigel.

Slender branching cactus 2 to

4 ft. h., the youngest spines
like quills.✓ No. 5231. *Cereus giganteus* Engelm.Ribs 18; 12 ft. h. Another individ.
20 ft. h., 18 in. diam., 8 branches: - photo taken

- This gateway of the river is
bordered by high, antelope-horn-
topped, sharp or cliff-like
walls and great mount.-like
blocks of red rock standing
up alongside the river in
tall castellated forms, or
crowning the summit of the
hills.

26 Oct. 1912.Monument Peak.

- An Indian came down the river with a tule boat, says a young riverman at Parker Hdq. It looked strange and we put our glasses on his craft. Looked almost as if he were just sitting on a box in the water. He afterwards tied up and we saw that it was a tule boat. The tules were collected so as to make a bundle or "log" so to speak, and then these bundles were laid side by side and lashed together with willow bark thongs. Willow poles were then laid crosswise and lashed down. Then he put a box in the middle to sit on and there he was! *Scirpus lacustris*.

✓ No. 5232. *Baccharis emeryi*
 freely branching, long stems, 6 to 8 ft. h.

- We came now into the flat valley of the Colorado River Indian Reservation, land at Parker for daily papers, and go on down 2 miles and camp for the first time on the Col. shore at 3 P. I objected to camping at this spot because the bank 5 ft. h. was caving heavily with loud reports but Rennie thought the particular spot where the Lotus stuck her nose against the beach all right. It seemed too dangerous in view of the warning I received. However the camp spot was ideal and a fine view of the distant mountain ranges in every direction. We took our kitchen stuff ashore and then I insisted on everything else coming out of the boat, even the oars! At 4 o'clock the next

morning the boat was still all right but at 5:30 o'clock she had sunk with her nose

sticking out of the water and her stern in deep water over our head. She was now usual lashed to shore by a long rope leading to a tree. We worked with her quite a while, let loose the rope and turned her bow down stream and she settled off in deeper water. We got into the water naked and attempted to move her off but we couldn't budge her after repeated and long trials. "Rennie" thought it very "bad luck" that she should have ridden safe all night until 5:30 within an hour or two of getting away, but "good luck" that "we" had taken the bars out. There was no mention by him of bad judgment in landing here and of course I did not refer to it. Rennie is a very genial and satisfactory companion and this foible is one common to people in general. We tried again to move her down stream, Rennie on one side the boat as near the middle of her as the depth of water permitted and I on the outside or river side of her. The water was so deep and the

juviflora var.
- *Prosopis glandulosa*, racemes
1, 2, 3, or 4-fruited.

Trees 20 ft. h!

- A strip of bank 7 ft 4 in wide
and 5 ft. h went off in front
of camp in 2 hrs. last night. Further
down the strip was 5 ft 5 in.
wide.

body of water so swift and strong that I could not maintain any footing on the shifting sand of the bottom. I was really "flooding" all the while and pushing against water! Finally we got out on the bank and with the pointer went to her "oxen-like" and bridged her a few inches and a few inches more and so on until we got her in quite shallow water. Then I got in with a bucket to scoop the sand out of her stern and after hard work in this freezing water was able to lift her up ^{with my knees} and bail a bucket of water out of her; after that it was steady bailing until she floated easily. Our seats of course floated off down the river.

- Wonderful and extensive display of sheet lightning all around the horizon last night.
 - Got away next am. after "shipwreck" at 10:15.

- For miles along the east shore are moored the canoes of the Indians.

- *Prosopis pubescens* (Screw Bean) Raceme setting as many as 15 fruits. These form a dense cluster of diverging pods in contrast to the pendulous pods of *Prosopis glandulosa*.

- Thousands of acres of flat sandbars below Parker are covered with a dense stand of *Populus fremontii* 40 to 60 ft. h., *Salix nigra* of about the same or a little less height and the (no. 5208) small willow* (8 to 12 ft. h.) with gray foliage and yellow bark.

Picture taken (S/pool 2, no. 10).
 These broad bars lie 4 to 6
 See p. 57.

feet above the present water level. These banks are, at this

point, 4 mi. below Parker. Being taken out by the river and

along the banks the large willows and cottonwoods lie

with their heads in the stream before being finally taken away.

No. 5233. *Prosopis pubescens* Screwbean. - Near Parker. Fifth

Nights Camp.

- A high wind blew all day today, making high waves and driving us on to the shallow east shore where we were frequently grounded. On the flats the sand was blown high in great clouds to be seen for miles. On bluffs along west shore there were most wonderful sand cascades or sand falls exactly like waterfalls in behavior. This was a most remarkable sight. The sand streams had worn channels or cañons just as in the case of water.

- Went into camp at 3⁰⁰ at mouth of arroyo on cal. shore opp. & below Doyle's landing.

Near Riverside Mts.

No. 5234. *Cucurbita palmata* Wats.
Gourd. Dry wash.

No. 5235. *Eriogonum deflexum* Torr.
Flowers hang in little clusters
from under side of branches
dry wash.

No. 5236. *Asclepias subulata* Dec.
Unthrued. Stems in clusters,
straight, tall, 3 to 4½ ft. h!!
Sepals and petals closely reflexed.
Tension on petals such that
when released at tip in bud
by a penknife point they fly
out radiately. Column with
5 triangular undulate scarious
lobes ^{sub-} appressed over top and
approximate. Horns long and
erect, much exceeding column,
consisting of 2 closely appressed wings
vertical on inner side, these
wings completely covering

a smaller shorter one which
ends in a distinct nubo
at its middle. Flowers a dull
yellowish-greenish-white. Bee
caught in flowers!!

- *Acacia greggii* ^{gray} Bush
with horizontal (or trailing) main
branches, and erect shoots.

In dry wash, average of the
large-sized individuals.

Branches ^{at base} diam. as follows:

1⅓ inches, 6⅔ inches, 5
inches, 4 inches; and

several others of the same
average size not measurable
for the thicket. Height 11 ft.
Diameter of crown 31 ft. !!

Leaves with pair of pinnae:

{ Lower pair with 6 leaflets }	} 7 leaflets	
{ Second " " 7 " }		8 "
{ Third " " 8 " }		9 "

Two counts!

- Started the Lotus into the stream
today at 12:30 P.M.

- ✓ No. 5237. *Palafoxia linearis*
Camp. with funnel-form whitish
corollas and long-exserted
pink styles.

- ✓ No. 5238. *Krameria canescens* ^{= K. Grayi Gray.}
Intricately and densely branched
thorny shrub, ^{2 1/4 ft. h.} more intricate
and denser than any shrub
hitherto met with. Fls. purple.
Lower lobe calyx largest,
lateral curving at tip, 2 upper
approximate, ^{upward} all recurving!

Orary with 2 lateral horizontally
flattened crenate-toothed glands.*
Stamens 4, all above orary on
one side the flower, in 2
unequal pairs, parallel with
the style which curves ^{up} downward.
Glands* all over papillose. Above
* = lower petals.

stamens and horizontally
spreading are 3 sterile yellowish
filaments with dilated purple
tips = petals of upper set.

- ✓ No. 5239. *Parinsonia torreyana* ^{= Cercidium floridum Benth.}
(*Cercidium torreyanum* Sarg.)
Tree 18 ft. h., 3 ft. circ. at ground.
2 ft. 10 in. at 2 ft. above ground.
Leaves with 2 pinnae; pinnae with
Mera, 2 or 3 pairs of leaflets; leaflets elliptic
* or obovate.
✓ No. 5240. *Lycium andersonii* Gray
4 to 5 ft. h. Berries gathered by S. J. Jones
in game in Palo Verde Valley, near Reno.
In Wash. Berries said by white to be good.
✓ No. 5241. *Grass* ^{= Hilaxia} *Leuaphis visida*.
Wash.
✓ No. 5242. Camp. *Parophyllum gracile* Benth.
Wash. 1 1/2 ft. h. acc. S.B.P. in H. 3/25/13

* Corolla tubular-funnel-form,
either 5 or 4-merous ^{very} on same
branchlet, !!! Stamens with
anthers maturing and elongating
unequally, inserted half-way
down* on tube, their bases
* about middle

hairy; style glabrous; stigma
one, green. Ovary glabrous.
Corolla glabrous. Calyx very short.

- The river sweeps in west
close to the base of the Riverside
Mts., giving us a fine view of
these mountains and the
mining camps at the base
of the mountain proper.

- The river vegetation is
exceedingly limited in species.
Compare it for example
with the lower Sacramento.
There are here no Cyperaceae
(save one), no rushes, no
tules, no ash, no walnut,
no sycamore, no maple,
none of the wealth of moisture
loving Leguminosae, Magnoliaceae
etc. So far as I have yet seen.

- Colorado River sand. There is so
much sand on sand bars and flats
and the water is carrying tons of it,
loaded to its fullest carrying
capacity that I managed not to
find quicksands. The bottom is
almost universally hard as I have
found in poling the boat, it
being difficult to make the pole
stick in the bottom. The current
is so swift and the sand so fine
that the sand packs very solidly.
I was peculiarly aware of this
when our boat was sunk. In
getting her out of the water it was
necessary to unload the sand
from her stern and bow. The
sand was packed so tight
that I could scarcely dig my
fingers into it. Even the
short time the boat was in the

water the river rapidly silted into her and I think probably that in half-a-day she would have silted full.

- We are now in the bend of the river near the Riverside Hotel. and are just passing out of view of the Whipple Range which has loomed finely the further we got away from it. The great Monument Peak out as its crest and stands out finely. the monument showing saliently at this distance. I have never seen a mountain named for an obvious natural feature that was as justly expressive as this and not strained. There is no effort or play of the bars here. The monument

might well have been built by man so far as likeness to the name is concerned. Further east is the flat-topped ^{or} table-land range which screens Bill Williams Park from this direction.

- Mosquitoes. We have not been troubled thus far. One or two nights there was a stray individual but no trouble when sleeping.

- *Salix nigra*, 30 ft. h., $4\frac{1}{2}$ in. diam at 4 in., 10 years old but rings not very distinct. These trees stand so thickly that it is not easy to make one's way through them. A small pole was $6\frac{1}{2}$ ft. h., $1\frac{1}{4}$ in. diam. at 4 in. and 6 yrs. old.

Riverside Mts., c. 300 ft.
Colorado River.

* = Riverside Mts. on contour map; prob. the waters are called so.
— Camped last night on a sandbar in the middle of the river bed. Went into camp at 5:15 and again into the stream at 8:20 this am. We now have the Riverside Mts. in full view; they parallel the river for many miles. The prominent mt. so near the river which we passed yesterday is not Riverside but the end of a range perpendicular to the river and separated as we now see from the Riverside Mts. by a low ^{broad} swale*. The Riverside ^{mts} are marked from far up the river by four equally spaced peaks of equal size & appearance. These stand centrally in the range as observed from here. As we have come nearer the northerly peak is seen at the angle to consist of 4 equal teeth and the southerly peak is truncated.

Riverside Co. 29 Oct. 1912

- No. 5243. *Olneya tesota* Gray.
Tree 5 ft. 6 in. circ., at 1 ft.,
19 ft. h., about 26 ft. broad,
branching low, at 2 + 3 ft., but
only one main trunk. Leafless
15 or 16, one always terminal
in any case. Stipular spines (in
pairs) always present! Washes.
Another tree 4 ft. 10 in. at 3 ft., + 25
ft. h. and crown fully as broad.*
No. 5244. *Mammillaria microcarpa* Engelm.
^{tetrancistræ Engelm.}
Cactus. Fruit crimson! Smooth.

* Bark light-colored, smooth.
roughened and shredding in
thick narrow strips only on old
trunks. In its best form a
tree with a single trunk 1 to 4
ft. h., giving rise to many upright
or ascending branches, forming

a crown typically broader than high; foliage very dense for a desert tree, bluish cast. Clumps with 15 or 20 stems from the ground are often seen; perhaps these arise as stump sprouts. Always in the washes.

Another tree 6 ft 3 in. circ at 2 1/2 ft., 43 ft. diam. crown! and 29 ft. h. Cont. at bottom of page.

✓ No. 5245.

Composite bush 2 ft. h. and broader than high. Stems all white & leaves green.

No. 5243 cont. Not always with a terminal leaflet but generally, perhaps usually. Leaflets obovate, or ^{sometimes} oblong-obovate. Commonly.

Best to say Leaflets obovate or cuneate-oblong!

River Bottoms.

Four prevailing plants:

1. *Salix nigra* - Black willow
2. *Salix fluviatilis*? - Gray shrub with yellow bark (no. 5209)
3. *Populus fremonti*, Fremont Cottonwood.
4. *Tessaria borealis*, Arrow-weed.

These occur in pure stands or mixed with each other, covering leagues and leagues of bottom lands. No. 4 is most abundant, in individuals, then no. 1, no. 2, no. 3.

(*Prosopis pubescens*)

Screwbean Mesquite occurs likewise on the bottoms, being more abundant there than anywhere else. Honey Mesquite also occurs on the bottoms & likewise abundantly in certain places (*Prosopis juliflora*).

- Cont. from footnote * p. 57. I considered these shrubs (not in fl.) from Braunian's Ldg., Whipple mts., the same as no. 5200.

- No. 5246. *Acacia greggii*
Pinnae on old wood 1 or 2
pairs; on new wood, of the
season, 2 or 3 pairs.

- Leaflets ^{oblong}, 4 to 6 pairs. Rarely
5 pinnae, one of them, the
fifth, being terminal. See p. 96
No. 5247. ~~Cactus~~ *Opuntia ramossissima*
forming clumps 2 ft. high. Engelm.

- River noises. Last night there
was a curious rattle-like noise
in the river that attracted our
attention. Also: this morning
at the lunch place the
river $\frac{2}{3}$ way across would
have intermittent fits with
a long grinding roar, a
little like a threshing machine.
From out still waters the
river will boil like a volcano,
as if some leviathan were
below. The heavy waves

are often on very shallow bottoms.
- Rise of the River. Went
into camp at ^{2.00 pm} Blythe Intake.
Almost immediately the
river began to rise and
tremendous masses of drift
came floating by. Some
of these logs suggested
amphibians, very slick and
greasy as they rolled
uneasily. One of these river
amphibians a mile away
looked like a huge hippo-
matas perhaps, struggling
to get up out of the river
and rolling over in the water.
The effect was dramatic
as we watched it. It was
the huge crown of a tree
struggling with the current
in somewhat shallow water.

Drift does not go very far at a time in a river that is not rising. Our seats went off when the boat sank at Parker but we recovered two of them about 100 yards below! This rise has unloosened and set free many a log jam and the river is running full of driftwood. The next morning the river was going down, having risen about 18 inches! Cf. F. G. 29:99.

Tessaria borealis, Arrow-wood, Rennie says this is greenish and that it sprouts up when cut down.

No. 5246a. *Acacia greggii* Gray. Pinnae as old as new wood 2 or 3 pairs. Blythe Intake. Black Point, Riverside Mts.

29 Oct. 1912

No. 5248. *Dalea parryi* Torr. & G. Leguminous shrub 1 ft. h. with spreading branches $1\frac{1}{2}$ to 2 ft. long. Flowers purple.

Banner $\frac{1}{3}$ as long as keel, wings $\frac{2}{3}$ " " " "

Banner cordately reniform and with a short sharp point at apex, the purple sides lined in or as almost to make a sac, the center whitish and with translucent gland-dots.

Wash. Blythe Intake, Palo Verde Valley at Black Point on edge Riverside Mts.

No. 5249. *Bebbia juncea* var. *aspera* Comp. bush $2\frac{1}{4}$ ft. h. & twice as broad, ~~very~~ densely branched. The younger stems green, the older stems white; leafless.

Wash. Rayless. Pappus - bristle counts: 20, 19, 20, 19.

Blythe Intake, c. 290 ft.

- ✓ No. 5250. *Hyptis* ^{*emeryi* Torr.} Black Point.
 Labiate shrub, numerous stems
 from base, 8 to 10 ft. h. Wash.
 Baggs at Ehrenburg calls it "Sage" and says
 the two work in it very freely. Cont. p. 103
 at bottom.
- ✓ No. 5250a. Grass.
 Sand mesa. *Sporobolus*
airoides Torr.

- ✓ No. 5251. *Fouquieria splendens* ^{Engelm.}
 Ocotillo. Stems 40 to 65 in
 a clump, very straight and
 unbranched, some individuals
 coming into leaf and looking
 very green as compared
 with the gray ones. Flowers
 borne in a cluster directly on
 end of stems. Capsule
 3-valved with a persistent
 central axis. [The plants as
 I remember were 8 to 10 ft.
 h.].

30 Oct. 1912.

- ✓ No. 5252. *Mammillaria deserti* Engelm.
Cactus

Mesa: barrel-like cacti clustered
 on one root. *Coryphantha chlorantha*.

- Blythe, the S.F. millionaire
 constructed 36 yrs. ago the
 canal from Black Point to Palo
 Verde Valley. It will soon be
 used as a great piece of irrigation
 to cover 40,000 acres and
 virtually 100,000 doubtless.

- Nights have been variable as to
 temp., sometimes (as at Palo
 Williams Park) so warm as to
 make the sleeping bag uncomfortable
 again as at Half-Way Bend on
 the sandbar at about 36° with
 a cold wind blowing.

- Left Blythe Intake at 9:50 am.

- ✓ No. 5253. Grass. *Echinochloa zelayensis*
 River bank, Ariz. Shore.

Colorado River
Palo Verde Valley

270 H.

- A sand flat 5 ft. above water level opposite us is going off. One cannot look along its stretch of a mile without seeing several flashes flashing off at one here and there. ^{The} sound of it is exactly like the ^{boom-boom} sound of artillery guns.

- Olneya tesota, 3 ft. 6 in. in circ. * at 3 1/2 ft. 20 ft. h. 35 ft. broad. Ehrenburg, wash near river.

- Parkinsonia torreyana, 4 ft 1 in. circ. at 1 ft., 33 ft. h. ^{↑ water}

- Acacia greggii, from main limbs, circ: 2 ft. 2 in.
2 ft. 9 "

* I wrote this "diam." in field but it must have been a verbal slip - Feb 13.

1 ft. 8 "

1 ft. 9 "

Riverside Co. 30 Oct. 1912

Two of the limbs (branches) are ascending, 2 reclining along ground. The whole tree is 19 ft. h. and 35 ft. in crown diameter. Its diameter in other direction (perpendicular to that taken) is greater but was not taken measured. - Wash near Ehrenburg.

The Catclaw, ^(Acacia greggii Gray) covers more ground than most desert trees on account of its peculiar habit of reclining branches.

The mesquite has a similar habit - and, says Remine, roots in this way.

- Went ashore a little above Ehrenburg and took pictures of Cereus g. Saunders 20 ft. h.

- Went into camp at Ehrenburg, Ariz, at 2:50 pm.

No. 5254. Eriogonum
Wash. Ehrenburg

No. 5255. Called "grama grass" by Tridens pulchellus. Stockman
Washes. Ehrenburg.

Evergreen spp. Deciduous spp.

- Olney tesota.
Mr. Baggs says:
"Leaves fall in June
and then the flowers
come. The upper
part of the tree
will be bare and the
lower part leafy.
The upper part will
flower and then
the leaves fall &
new leaves come"

Propolis glandulosa
" *pubescens*
Houquieria splendens
Engelm.
Acacia greggii Gray.

Ocotillo - it may
flower 2 or 3 times
a season. It flowers
when there are rains,
and remains
dormant during
the dry periods.
It gets leafy at
once after rain &
its leaves pass away
quickly.

- The best desert house made of
native materials is the Cottonwood
frame with adobe fillings. The
standards, plates, rafters, etc.
are Cottonwood. Then a sort of
willow lath is put on both sides,
split willow with the flat side
out in the best houses, this
put on for about 2 feet and
then filled & tamped in. The
rafters are ^{with mud} covered with arrow-wood
and then laid over with adobe,
or better than arrow-wood is
Tule if it can be had. The
arrow-wood is commonly
used to form a second or
sun-shelter roof above the
first roof.

of corolla deeply notched.
No. 5250 Cont. Upper lip middle lobe of lower lip
strongly developed at end into a bowl-shaped
sac, the base of the lobe abruptly retrocurved
in such a way as to make a sharp ridge
transversely just on margin of sac. Upper
pair of stamens with hairy filaments, lower pair nearly glab.
Style glabrous.

No. 5256. *Acacia greggii* Gray
Ehrenburg, Wash.

- Indians (of this region) never kill a coyote or a snake.
- Desert green peas. The desert prospectors shell out the green seeds of the Palo Verde and cook them like garden peas. If taken just at the right stage they taste very much like ordinary peas, but soon get too hard.
- *Cereus giganteus*. Ward says: The fruit is a little like a fig and is full of seeds like a fig. It is crimson and much larger than a fig. The fruits are highly thought of and sought by the desert-people. It is only in occas-

- ional years that there is a good crop. The birds, ^{inches,} woodpeckers, etc go after them very quickly.
- The desert men speak of three mesquites: the ordinary mesquite, the Screwbean Mesquite and the Catclaw Mesquite. "They are all very much alike."
 - The pods of ^{all} these leguminous ^{trees} desert-trees are the main resource of domestic animals on the desert.
 - Baggs speaks of two Palo Verdes, a female tree which comes first and a male scraggly tree which comes a month later. See p. 109.
 - The seeds of the desert leguminous trees are very very hard when dead ripe.
 - *Strophox lentiformis*, Palo Verde Valley, Cal., near Ehrenburg, Ldg. - average bush = 8 ft. h., 21 ft. diam. of crown.

juliflora
- *Prosopis* (*glandulosa*): -
Beggs says it flowers and fruits
2 or 3 times in a season.

- *Cereus giganteus*, the young
fernyman says this species is
abundant in southern Nevada
(Lincoln Co.). The tallest of the nearest
cluster of 3, beyond the wash, = 20 ft. h.

- *Prosopis glandulosa*,
tree 6 ft 1 in. in diam. at
18 in., 18 ft. h. - Palo
Verde Valley.

- *Corona de Cristo*, grows
near La Paz. Beggs says
it is a sign of water and
nearly always get water
by digging for it. [He sends
me a spm. of *Dalea spinosa*!!!]

- *Cereus giganteus*, about
Bisbee, Ariz. Beggs says
170 to 200 feet high, but admits this
is mere guessing. See p. 109.

No. 5257. *Sesbania macrocarpa* Muhl.
= *S. exaltata*

Thicket ³⁵ 18 ft. h. Fls. yellow,
the banner dull white and
brownish mottled outside;
reddish dotted inside.
all parts of fl. glabrous.
Leath stamens free. Plenty 10 ft.
h.

- *Corpus Christi*, [doubtless same
as *Corona de Cristo*, "grows in
McCoy Wash in rich alluvial
soil. Catclaw grows there very
large; also mesquite. I saw
two large plants. Was working
there digging a well trying to
find water. Followed the
mesquite roots down, thinking
that I would surely find water.
Went down 125 feet but no
water. The hole is still there.
McCoy Wash is in the McCoy

Mountains. The nearest springs to my well are McCoy Springs (10 miles) and Spring (6 miles). — Hopkins, at Blythe, of the firm of Carrigan and Hopkins.

— No. 5258. *Teucrium cubense* L. ^{var. *arabum* Jepson}
Blythe. Overflow flats. Stems many from the root-crown, ascending at base, erect above. Three diverging, acute, lobes to lower lip, the middle largest; the upper lip very deeply cleft, the lobes occupying a lateral position and looking as if part of the lower lip. The lower lip then looks like a downwardly spreading pinnately lobed structure.

Corolla light blue. See p. 148.
Ovary green; anthers 7-celled. at bottom.

✓ No. 5259. *Nama lischidium* Gray ^{acc. S. & P.} var. λ
Corolla narrowly campanulate, rose-purple, ("magenta" says Rennie), Blythe, overflow flats. Colonizers. ^{Feb. Parish in litt. Mar. 28, 1913.}
— *Cereus giganteus* cont. from p.

106. These figures are, probably, worth setting down only as indicating the profound impression these giants of the cactus world make upon a man who has a native sense of the interests attaching to the plant world.

— Palo Verde. cont from p. 105. I should Baggs *Parkinsonia torreyana** and microphylls** and their correspond to his female + male trees" respectively, the "male" being the more ragged and less leafy tree.
* Fil. Apr. acc. Sargent + * Mar-June acc. Sarg.

- This is a flat country here at Ehrenburg but a few miles away the horizon is tapered by the diversified ^(in every direction) and singular outlines of desert ranges which exhibit deep purple tones under the atmospheric conditions of the desert.

- The pass of the Mohave Cañon was probably the finest we shall see. The tremendous torrent of the river ran in steady powerful sweeping currents and in broad whirlpools between the high walls of the cañon ^{above} which towered magnificently colored peaks of a variety of red, brown and terracotta

miles.

✓ No. 5260. *Psistrophe corpaea* Greene. ^{acc. S. B. P.}
Rays lemon-yellow. Flats, overflow.
Blythe. [cf. Parish in litt. Jepson
Corr. 7:608].

✓ No. 5261. *Euphorbia albomarginata* T. & G.
Overflow flats. Blythe.
Sometimes 4 ft. broad! and covering the ground with a close weave like a mat.

✓ No. 5262. *Aristida ^{adscensionis} ~~truncata~~* L.
Grass. Cult. fields. Blythe.

^{= *S. emoryi* ssp. *variabilis* (californica) Jepson.}
✓ No. 5263. *Sphaeralcea ^{californica} ~~antigua~~* var. 2
Corolla saffron-red or bright terra-cotta, a peculiar color. Blythe, flats, 4 ft. h., many-stemmed clump.
= *S. fendleri* Gray var. *californica* Parish.

juliflora var.
 - *Prosopis glandulosa*,
 common over the entire
 Palo Verde Valley flat, Calif.,
 commonly with short ($\frac{1}{4}$ to
 4 ft. trunks) 1 ft. in diam.
 or as often branching widely
 at the very ground. 10 to
 14 ft. h., occasionally 18
 ft. h. The regular resource
 for goats; goats for fencing
 which have been "burned",
 charred on outside, are "never
 attacked by borers". *Prosopis*
pubescens grows commonly
 in water flats than the
P. glandulosa.

No. 5264. *Aster exilis* Ell.
~~*Erigeron canadensis*~~
 Very abundant along the irrig.
 ditches. Heads pink-purple.
 Blythe. Palo Verde Val.

No. 5265. *Hoffmannseggia densiflora* Bth.
 Cor. saffron-yellow turning a
 deep or bright brick color.
 Plants of the height of
 spurs. Colonizers. Upper
 petal with smaller blade with
 incurved margin. Overflow
 flats & ditch sides, Blythe.

No. 5266. *Baccharis*
 Blythe. flats. 7 ft. h. Shrub
 1 inch diam. at base.
 Palo Verde Valley.

No. 5267. *Pectis papposa* acc. S.B.P.
 Crisp. Plants, largest, 1 to $1\frac{1}{4}$
 ft. broad. Edge cult. fields.
 Blythe. Palo Verde Valley

No. 5268. *Capriola dactylon*
Bermuda Grass.
 The common grass on river
 banks and on flats about

Blythe, and on levee and ditch banks. Mats the ground closely over considerable areas, the only things which forms a cover to keep sand down underfoot.

- No. 5269 *Chloris* ^{virgata Swartz.} ~~legans~~ (det. B. Crampton, 3/20)
Grass, edge. cult. (cotton) field.
Blythe.

- No. 5270. *Ammania* ^{coccinea Roth.}
Abundant in very low places near Blythe, Palo Verde Valley.

- No. 5271. *Sesuvium* ^{verrucosum Raf.} ~~sessile~~
Frequent on lower flats near Blythe.

- Left Blythe Ldg at 12:20 pm

- No. 5272 = *Cercidium* ^{microphylla Torr.} *Parkinsonia* ^{microphylla Torr.}
Trunk 3 ft. 4 in at 1 ft.; 3 ft. 7 in. at 2 ft.; = circumferences in both cases. Height = 24 feet. (Both Palo Verde are usually tree types, in form, more so than the mesquites.). Leaflets 4 to 8 pairs, the leaflets on the rachis in pairs and with their faces approximating. Ariz. shore, opp. lower Palo Verde Valley, Cibola, north.
- No. 5273. = *Cercidium* ^{flopidum} *Parkinsonia* ^{torreyana} ~~torreyana~~ (det. *Cercidium torreyanum* Sarg.)
Trunk 1 ft. 5 in. in diam. at 1 ft., the main branch above this of almost equal diam. Height = 29 ft. with preced.

- *Acacia greggii*. Trunk 4 ft. 3 in. ^{circ.} at 1 foot. Trunk 4 ft. h. Tree 12 ft. h., about 31 ft. broad - with preced.

- At Ehrenberg ferry were three rather rough looking men, two of whom, Dale & Hard, owned the ferry. They looked as common and as ignorant as men of their station usually do. The older man, Dale, swore vulgarly at the cat and so on. Imagine then my surprise later in the evening to find that this man, living in a crude tent shack with dirt floor, was very well informed, had live and interesting ideas about world politics and especially the foreign relations of England and glibly quoting sayings of Lord Palmerston. This man, living in a remote desert under squalid conditions. The third man, Baggs, had

travelled widely as a miner in the west and was in certain respects remarkably well-informed. The outstanding fact is that these men read and resolve what they read. They have time to think, the city man has no time for thought. The republic is safe when the "plain people" are of this kind.

- At Blythe I was introduced to Manuel Solano. He was dressed roughly and took us in to his squalid looking adobe and showed us a hot-water furnace he was installing. The surprise came when he showed us a room he was building, in the Mission style. There were 5 arched windows on the south. On the east he decided to have a crescent moon window with a long curving arch. The

arch was rather broad for adobe but it stood the test. He laughingly said: "I live close to nature's heart and I wanted the moon window. Then it seemed to me I wanted something different at the other end of the room and yet the effect of the crescent arch was very fine. So I decided to have a 14-day moon at the west end as the east end was a 7-day moon." But sure enough he did it. He talked so much to his builders about having things like nature that one of them constantly went him one better.

Why not have the sand-clay finish on the walls as it is, he said. That is the color of the desert. And have the ceiling green which is the color of the Greasewood (*Larrea mexicana*). And so it is at present. All the while Solano talked gaily and entertainingly, twirling his cigarette and blowing thin clouds of smoke. On one wall he had let in to the wall two tablets of dancing cupids, one tablet of Apollo and the Muses, and another of The Flight of Night. Most strangers here would have taken this man, from

his appearance, ^{at least at first glance,} for an
 ignorant-born or low Mexican
 - Camped in a wash in
 Lower Palo Verde Valley ^{= "Swallownest Bend" acc. his party}
 on the Arizona shore at
 3:30. We traveled only 3
 hours this afternoon but
 made rapid time. The
 wash is a fine camp
 spot, high and dry, and
 other camping parties have
 been here. It falls dark
 early and we turned on
 the electric light to put
 our beds down, that is
 set fire to a Smoke Bush.
 The fire flooded the arroyo
 with light and made
 its walls look very
 interesting. Got away into the
 stream next am at 8:45

- ✓ No. 5274. *Brandegea bigelovii* Cogn.
 Cucurbit in the washes. Corolla ^{the small} 6
 male fls. white, 5-parted into
 ovate acute lobes. Ariz. Cibola.
- ✓ No. 5275. *Palafoxia linearis*.
 Composite. Corollas dull whitish,
 1 1/2 in. diam., spreading
 tubular, exserting upward, a
 tuft of hairs on back of each corolla lobe.
 little washes. Ariz. Heads
 as a whole a little pinkish.
 Pappus - paleae 4, subulate, scarious
 margined, denticulate at tip, equalling cor.
 ✓ No. 5276. *Brickellia barbatula* Lag.
 Grass. wash. Ariz. Cibola
- ✓ No. 5277. *Echinocereus engelmannii*
 Cactus. 7 long main spines with
 smaller ^{shorter} spines at base
 on the river flats.
- *Populus fremontii* Reunier says
 all the large trees die when they
 reach a certain age.

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- *Olneya tesota*. Tree 3 ft. 5 in. at ground circ; 3 ft. 7 in. circ. at 2 ft. 31 feet h. and with a round crown 26 ft. broad, the lower branches sweeping the ground.

Photo taken, 3-6. See photo!

- *Parkinsonia farreyana* ^{Wats. trees} here at night camp very leafy. Trees all along river either leafy or in part of crown leafy, rather few naked individuals. Fewer than I had expected to see.

- *Ceanothus thyrsiflorus*. Near Ft. Bragg where the soil is as a whole most poor, this species, when growing well obig, is a sign of good soil, says Reunil.

Imperial Co.

✓ No. 5278. *Bouteloua aristidoides* Griseb. Grass. Ariz. Wash. Cibola Valley

✓ No. 5279. Grass. *Muhlenbergia nuda* ^{(DC.) Kunth} Ariz. Wash. Cibola Valley

No. 5280. *Polygonum pensilvanicum* Greene 18 to 36 in. h. decumbent at base.

Perianth red-pink in bud with white tips, becoming almost white in anthesis. Perianth white inside. Stamens 7, 5 alt. with perianth-lobes. Style 2-cleft. - Cal. shore, Lower Palo Verde Val. Internodes semi-spindle-shaped.

No. 5281. *Cucurbita digitata* Gray. Fls. - squash yellow. Style short, with 5 deeply divided stigmas, each stigmatic division linear-lanceolate. - Wash, upper end Cibola Valley. Fruits 5-celled, the placental plates extending nearly to wall of fruit, bearing seeds on each side.

- At the lower end of Palo Verde valley is the Chocolate Range*, the first peak is near the river, bold and isolated, somewhat conical summit with 2 slopes on the west which are remarkably serrated as seen against the skyline. = Milpitas Mt!

No. 5281a. *Cucurbita palmata* Walp.

No. 5282. *Aristida* ^{*adscensionis* L.} ~~*broncochloa* HBK.~~

Grass. Cibola Val., upper end, wash.

No. 5283. *Tidestromia oblongifolia* (Wats.) Standl. acc. S.B.P.
~~*Gladiolus oblongifolia*~~

Sepals 5 with 5 stamens alt. with them. The stamens arise from the margin of a shortly

* I doubt this being the Chocolate Mts. Too far north.

cup-shaped disk with 5 short teeth alternating with the filaments. This flower is set in an involucre of 3 bracts which below are coherent to form a tube. Apparently more than one fl. to the invol. Plants annual, 12 to 15 in. h., 2 to 3 ft. broad, somewhat mound-like.

Cal. shore. Camp of Nov. 2-3.

Milpitas. cf. Parish in litt. 7:608

- *Olneya tesota*. Tree 6 ft. 8 in. circ. at smallest part of 4 ft. h. trunk viz. at 1 ft. Crown 47 ft. wide in largest direction, 32 ft. h.

The Ironwood is the finest and largest tree of the desert. It is the most heavily foliated and its pleasant blue-green foliage reminds me constantly in aspect of the Blue Oak. I

measure another tree: 8 ft. 2 in.
 at 1 ft. (smallest part of 4 ft.
 trunk), 46 ft. h. Cal. shore.
 - Left camp at 10.10. Camp in
 wash near some rounded
 hills 40 ft. h. projecting into
 river, about 2 mi. south of
 the first hills we came to
 on the Cal. shore at south
 end of Palo Verde valley. Yesterday
 aft. we landed on the Ariz.
 shore at Cibola Landing &
 walked through the arrow-wood
 & willow to the cult. gardens lying
 in the bottom behind. The corn
 stood in the fields, 8 ft. h., with
 watermelons and squash between.
 It reminded me of description
 of the Missouri River bottom.
 We took a half-dozen "roasting
 ears" and went back to our

boat, not having the luck to
 speak to any one.

Our camp was really just as nearly
 east or perhaps a little s. of east
 of the prominent peak* described
 yesterday as the first landmark
 on the west side of the river
 coming south and at base of its spur.

Today is a perfect fleckless
 balmy day, the sun showing
 before it came the wonderful
 clearness and luxury of the day.

* Milpitas Mt.

No-5284. *Nicotiana trigonophylla*
^{Sumat.}
^{acc. 581?}
 Corolla a dull white or slightly
 greenish white, constricted at
 orifice, the throat below a little
 bulbous-dilated; profer tube short,
 the stamens inserted at its
 summit, the anthers standing
 just below the orifice. Fils.

Camp at base first spur, lower
end of Palo Verde Valley = Milpitas!

and style glabrous. Ovary
seated on a ^{narrow annular} red disk. Do
all Salanacaeae have this disk?

Plants perennial! 2 ft. h!

Wash. Camp of Nov. 2-3 Milpitas.

No. 5285. *Argythamnia serrata* Heller
= *Ditaxis serrata* Heller
{ ♂ fl.: - } *Müll. Arg.*
ascending stems. Corolla of 5

distinct ovate sharply pointed
petals. Sepals 5, distinct, hairy, a little shorter
than petals. Stamens in a column, a

circle of 5 anthers on short free
fils. immediately above a like

circle of 5 anthers below. A circle

of short sterile ^{truncate} filaments or
glands alternate with petals.

♀ fl.: - Perianth parts same
as in ♂ fl. Ovary 3-lobed;
styles 3, each deeply 2-cleft.
Sepals accrescent!

Flower clusters axillary, con-
sisting of 1 ♀ fl. and 1 ^{2 or} ♂ fl. and

perhaps 3, ♂ flowers. Camp of
Nov. 2-3. Milpitas. [cf. Parish in litt.
Japan Correspondence 7:608]

No. 5286. *Eriogonum inflatum*
var. *deflatum*

Perennial. nodes inflated, $\frac{1}{2}$ spindle-
shaped. Stamens 9. Ovary very strongly
3-angular. Inner perianth-segment
triangular-lanceolate; outer segments
broadly lanceolate, the latter more
hairy on back than former. Fls.
greenish-yellowish. with preced.

No. 5287. *Baccharis sarothoides* Gray
Comp. bush 8 ft. h., leafless
"cedar-like" shrub, many-stem-
med. Wash. with preced. Milpitas.

No. 5288.

Euphorbia polycarpa Benth. var. *typica*
with preced.

No. 5289. *Martynia althaeafolia* Benth.
Mallow-like leaves. Wash. Milpitas.

- The forest of *Salix nigra* and *Populus fremonti* is becoming larger as to size of trees, 50 to 60 ft. h. and the banks are more beautiful.
- As we looked down river to the ^{tilled} ^{yesterday} mesa sloping down to our camping place of last night, the growth of *Olneya tesota* and *Parkinsonia torreyana* was finer than seen elsewhere; the mesa looked wooded, from our viewpoint, indeed almost forested!
- Stopped at Draper's Landing. ^(210 ft.) Draper is a genuine pioneer. His language is crisp, forceful, direct; of course not polished and more or less profane. He is installing a pumping plant, jacked up the bank from the river a 4-in. boiler, has cement & has accumulated for 8 yrs. Single handed the work goes on as he rounds up junk.

- Near Draper's Landing is a rock in the river. A little below is a ^(alt. 210 ft.) three-cornered rock (Sightstone Rock!). At the 2d corner of the first bend below is a small pyramidal rock near the Arizona shore. ^{box, coyote,}
- Draper had corn, badger and beaver skins. He had a lion skin which he sold to Grinnell (on his trip down the river) for \$25.00.
- Below Draper's landing the scenery grows wild and picturesque. The many-colored hills and mountains come close to the river's edge. The peaks are very bold and prominent, the ranges exceedingly jagged, more so as ranges, than the Needles.
- No. 5290. *Krameria canescens* Gray. ^{K. Grayi}
upper sepals 2, ascending; 2 lateral ascending, + approximating upper sepals; 1 lower & largest sepal descending; 3 upper petals parallel & approximate, 2 have gland-like swell & round. Stamens all on one (the upper) side of flower. - Milpitas.

v. No. 5291. *Cercidium floridum* seedling.
Parkinsonia Fournierii seedling.
M. p. tai w. p. b.

- Red Rock, a great block of rock on east side river, protecting Hoque Ranch, facing 2 blocks on west side, the blocks 60 to 100 ft. high, with vertical walls.

- The Hoques say that they kill the wild turkeys in the hills and jerk the meat for chicken feed.

- Gabilan Rock, the east or Arizona rock of Red Rock Gate. Gabilan Valley, the Hoque ranch.

- So to left (Ariz. shore) of Corvino Rock, $\frac{1}{3}$ mile below Red Rock Gate. Reef to right and boats have been lost there.

- We pass Barrier Islands, a group of rocks lying directly across stream in a row.

- Picacho, just ahead, lying on the river opp. Picacho Peaks,

the great pinnacle landmark seen from far up the river. Picacho was destroyed by the great flood of last spring, the adobe mostly melting under the strain. The hamlet is only partially rebuilt of wooden shacks. It is a pathetic deserted mining village, the pop. mostly Mexican. Camped Picacho at 4.10 and went on next am. at 9.00

No. 5292. *Datura discolor* Benth. Corolla white, with indigo flush in throat, 4 in. long, $1\frac{3}{4}$ in. broad limb. Sinuses of corolla represented by angles almost as prominent as ^{cor.} lobes, and marked by slender subulate productions. Fruit with reflexed collar and woolly-sub. spines. Picacho.

- Monument Cactus - a few (3) individuals miles below Picacho, Ariz. shore. Capsule nodding!

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No. 5293. *Phragmites communis* Trin.
Canebrake. Comes in heavily
and dominates the river shore
as the Coyote* Willows^(No. 5208) did
above. Fine stand of a
mile of it, where we first
meet it as a dominant
plant. Have been seeing
it in patches for several
days - as far back as Palo
Verde Valley. Here it forms
Canebrake Cañon.

- *Spirastachys occidentalis*,
on Ariz. shore, 4 mi. below
Picacho, 4 to 8 ft. h.

- Chocolate Mts. are well named.
They are very naked and of
various shades of chocolate and
red-brown.

* Plants neither in flower or fruit
and merely used as a designation
_{field}

- We now come again into flat country
below Canebrake Cañon, a large valley
lying off to the Ariz. side.

On its eastern border (or s.e.) it
is bounded by a prominent range
topped by 2 or 3 very prominent
castle-like rocks of great size,
one being especially vast.*

- *Cereus giganteus* on prom. rock***
sticking out into river about
12 mi. below Picacho on Cal.
side; also on mts. near river,
Ariz. shore about 8 mi. below
Picacho.

*** = ? Corner Rock

* Castle Dome range.

** Castle Dome.

- We enter & pass through the
Purple Hills Pass.

136 Purple Hills Pass to Laguna.

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No. 5294 *Perityle emargi* acc S.B.P.

very fleshy - brittle Composite.

Rayes 11, 10, 11, 13, white. Plant with ascending stems, forming low dense clumps 8 to 18 in. high and 10^{in.} to 2 1/2 ft. broad. River bank. Purple Hills Pass. Disk yellow; cor. tube glandular. Achenes flattened.

No. 5295. *Boudolia lycioides* ^{Watsch.}
var. *conocarpa*
Stems long, straggly.
Shrub 6 ft. h., white-barked!

Purple Hills Pass.

- *Lycium torreyi* Cor. lavender or violet.
No. 5295a. Purple Hills Pass

- *Cereus giganteus*, Purple Hills Pass, Ariz. shore.

- *Populus fremontii*. Grass of large size clings towards Tehama from Vina. Larger than anything seen on Col. River - Rennie.

- We strike another flat valley after leaving the Purple Hills.

- Laguna Dam next.

- Coyote Willow (= No. 5208), 27 ft. h., 6 years old, 2 5/8 in. diam. at 1 ft.

- *Salix nigra*, 29 1/2 ft. h., 4 in. trunk diam., 8 years old.

- Camped on Ariz. shore just above Laguna Dam at 4:15. Got away next am. 8:30.

Reached the Dam in a few minutes and got our boat across by lifting her out of the water onto a hand-car on a construction railroad.

Left dam at 1:50. For a long ways down the river Castle Dam Rock is still a great landmark, and after

a bend more, Picaecho Peak comes into view, a truly more imposing landmark than from up river. Great flocks of pelicans are a feature of the lower river, and add, by their ungainly flight and curious bodies to the interest of the traveler.

- The seed bars are laid down in succession, one after another, and the areas are thus seeded with *Salix nigra* glen, in different years. One will thus see a succession of stands of willow, one higher than the other and behind the other. The effect is that of plantations.

- As one looks up the river
and across the beautiful

green of the forest of willow
and cottonwood in the river
bottoms, one's eye next rests
on the soft purple of the
mountain ranges of the desert.
This is all one sees; the
wonderful tones of green,
backed by wonderful tones
of purple. The mesa is in
such instances quite shut-
out of view - all its barrenness
and dryness and shimmering
heat is eliminated from
the view.

We camp at 4:30 at the mouth of the Jila River, on a low bluff (12 ft. h.) with a sand dune on top. The camp is a rather fine one. It is very very cold during the night, the coldest yet. The

town of Yuma is distant only about a mile. In the morning at 10:00 we go on, soon reach the town and beach the boat under the walls of the old Fort Yuma which crowns one of the rocky headlands at this point of the river, the ^{former} infantry post being on the opposite headland across the river. The fort on the Arizona side is a square of adobe walls and sentry towers at the corners. I go to work on my plants on the beach, to dry out and pack up, and Reine goes to the town to plot our further travel and also to get news of the national election, as between Wilson, Taft, & Roosevelt.

- *Populus fremonti*, 10 ft. 3 in. circ., 70 ft. h.
 - No. 5296. *Populus fremonti* Yuma, Ariz.
 No. 5297. *Sphaeralcea fendleri* Gray
 var. *gambusia* Jeps on n. var.
 Bard. cal. Corolla pale pink. This does not well describe the shade but I find it difficult to get a term for it. = *S. angustifolia* Don. var. *gambusia* Jeps. (on the river front, Yuma,
 - At the beach a poorly dressed indifferent looking man strayed along looking at driftwood. Finally he came up and we fell to talking. A little to my surprise, altho I am not really surprised at intellect in back-country men, he said: I like plants. When people ask me why I take

so much interest in plants, I say: There is no limit to them. There is no limit to their production and productive power, no limit to size or variety, that has yet been reached. There is no limit to what we can learn about them."

- Visited the Datefarm Exp. Sta. of Univ. Ariz. 2 miles east of Yuma.

They have ^{trees} producing dates which we sampled. The production per acre of crops under special care on the farm is hardly credible.

Tefary Bean (*Phaseolus acutifolius* var. *latifolius*) is ^{very} productive. See Univ. Ariz. Agr. Exp. Stat. Timely Hints, no. 92. The Indians prefer this native bean to all others.

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- Visited the Federal Exp. Farm at Bard. They have dates, cotton, milo maize, Roselle figs (which froze down to the ground last winter) etc. The figs resprouted some. A plant is making into a new tree by pruning. They hope by mild winters to get their established so frost will not matter. Subsoil water is the great problem here now. Met O.F. Cook who is here. He called my attention to the small leaf form of *Populus fremontii* as exhibited by a tree on the farm, the leaves small and almost rhomboidal. A little of this I had noted up the river and the form shows in one of my specimens.

- Arrowweed. Indian house near Ft Yuma, Cal, shudding streamers = *Populus fremontii*; latting = *Salix nigra*; rattling = *Pluchea sericea*. No adobe used. See photo.

- Vegetation of Colorado Desert from Thermal & Coachella to Indio and on, is more abundant than I remembered. Beats the Mohave Desert all out about Barstow and elsewhere as I remember. The shrubs are tall and abundant and *Chrysothamnus* abundantly in flower. The mesquite sandhills just west of Indio are wonderful things, small distinct knolls 10 to 20 ft. h. and 2 or 3 times as broad. At Indio I examined *Atriplex lentiformis*, *Tessaria borealis*, *Prosopis juliflora* var. *glandulosa*.

- Larrea mexicana* is abundant. (Thermal and Coachella are very available small village stopping places.)
- Palm Springs station is a mere railway station without any village at all that I saw.
- As we draw in towards San Geronimo Pass, the effect of wind on the shrubs is more and more noticeable. The *Larrea*s look like trailing oaks in the Bay region.
- *Isomeris arborea*, the copperadensis shrub, in fl! at Palm Springs.
- *Frauseria* ? clumps 1 to 2 ft. h. abundant west of Palm Spr. and a very ragged thorny angular bush 3 ft. h. - *Sarcobatus* ? or *Frauseria* ?

- The Colorado Desert near the San Jacinto Range has a lure in its "build" not felt in the Mohave. The ranges rising so high and so steeply, the lines or clumps of small trees localizing certain places across the desert in a very living way; they rise just sufficiently to give sense of definite localities of interest instead of one monotonous desert sameness.

- *Physalis crassifolia*, no. 5220. cont. from p. 64. Made no note on the spot as to its being annual or perennial, but I remember distinctly regarding it as annual. I dug up a root and preserved sections of it. It seems to me that if I had seen any evidence of a previous year's growth on the root-crown I should have noted it. As I say my remembrance is distinctly that the root was annual.

- There is a riding station some ten miles east of Babazon which would furnish a camp desirable for botanizing. The wash is close at hand and very fine (*Chilopsis* etc., now full of fruit), the base of San Jacinto only $\frac{1}{2}$ mile away. There is a water tank with a great waste flowing (presumably artesian). The Yuccas come in shortly. The place is right under the (apparently north) sheer wall of San Jacinto Mountain. [This would be near or within a mile or two of White-water, as I judge from the spurs and landmarks on the contour map.]

- *Chilopsis saligna*, 10 to 14 ft. h., many-stemmed bush always as I see it in San Geronio Pass; in fruit mostly, the long slender pods hanging thickly on top of bushes; one shrub noted in full flower!

- The purple of the desert ranges is like water color delicate, tender, ineffable; the purple of the chaparral ranges is deeper, more solid, like a close woven warp, heavier and darker, indigo!

No. 5258 Cont. from p. 108.

Lower (anterior) pair of stamens longer than the upper (posterior) pair. Hind. lobes lower lip slightly cupped; palate in center slightly hairy and a few purple dots on edge. Style glabrous; stigma 2-lobed.

- *Populus fremonti*, its uses in the Colorado River Valley. Telephone Poles; timber for houses; Bridges; Posts for fencing; Firewood. It is a highly valuable tree for a region where wood is so scarce. There is a line of telephone poles running to Bard from Yuma. They are about 16 ft. tall, are painted red, the portion in the ground creosoted apparently, and present a very attractive appearance. I do not know how long they last in the ground but the cost of replacing would be small.

No. 5206 Cont. I find now (at Berkeley) that stamens are as long as corolla-lobes; likewise style. A field observation must have been on imperfect flowers.

- *Adenostoma fasciculatum*.
Chamise-covered hills a
great feature between
Barnhart and the San Bernard-
ino valley. Pure stand.

- San Bernardino is a grow-
ing, very clean and very
attractive city. Its business section
is rather surprising to me, in
its extent and the character
of its buildings.

- Sweet Potatoes, production
at Yuma: $\frac{1}{2}$ acre = 7400 lbs!
cf. Univ. Ariz. Agr. Exp. Sta.
Timely Hints, no. 86.

- Mesquite. Cf. art. by S. J. Holsinger,
The Forester, vol. 8, p. 447.

- William Murray. See MSS sketch
of his life by his daughter in litt.,
Letter File, 1912.

- *Eschscholtzia californica*. There
have been heavy rains and the
flowering, while rather scant
now, is mostly golden yellow
with yellow, or only a
little yellow tips. Perhaps the
color could be controlled by
the use of water or proper
irrigation.

Berkeley Hills, Nov. 23.

No. 5298. *Baccharis pilularis*.

Grows on both north and south
slopes, but prefers northerly
slopes or hollows. Mostly 3 or
4 ft. high, sometimes 5 ft.
Top of Berkeley Hills, and all way
down to Bancroft^{way} and Piedmont
& Warring where there were
formerly extensive colonies, &
indeed a few of the original
plants persist still.

- No. 5298a. *Quercus wislizenii* var. *frutescens*. On north slope, side-hill trail, about 300 or 400 yds. westerly from Sugar Loaf, Berkeley Hills. 23 Nov.
- *Adenostoma fasciculatum*. Steepest slopes exposed to most direct rays of the sun; very abundant in the Sierra Nevada & in inner Coast Ranges. Comes right out to coast but mostly only in small patches. However it always occupies its favorite habitats, the very steep south slopes. It is in the Berkeley Hills in such places and often ^{occurs as an} essentially pure stand, as on south slope Skyline Ridge near Sugar Loaf. As I stood on the summit of the ridge yesterday, Nov. 23, looking towards Mt. Diablo, the great patches of this species on Lobaytle Ridge were

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rather impressive. The slope looked nearly vertical but is rather far from it surely if one were on the spot.

No. 5299. See p. 194.

- *Fouquieria splendens*, stamen counts: 16, 15, 17, 17, 15, 16. Hall, Coyote Cañon, no. 2789. Ovary with 3 placentae intruded in cavity of ovary so as to make an ovary completely 3-celled at very base but ^{only} partially so above.
- Lyon, W.S. *cf.* Bot. Gaz. 31:314.
- *Bebbia juncea*. Argus Mts, Purpus 5357, bristles of pappus, 20, 20., as long* as corolla. * used by Greene as char. of var. *aspera* but no dif. in the forms as to this.
- Stamper has just been showing me some pieces of *Bercocarpus parvifolius* & *ledifolius*, one piece of " Santa Cruz Mts & one " Alpine Co.

He has turned out pieces under the lathe, into wooden boxes with lids having threads. He says the wood takes threads beautifully, working in the shop under metal tools just like brass. The wood is of course very heavy and will sink in water. Stamper is very enthusiastic about its density and close fine grain. He did not know there were two species but recognized distinctive characters in the two pieces. He speaks of a "sassafras" ^{native cal.} * wood at which in Dr. Hudson's house which I do not place by the name. It is sawn into lumber or at least some "planks" were made from it when I told.

* = *Torreya californica*

Stamper about looking up at the Sierra wall above Owens Lake, puzzled at the curiously palmately and irregularly branching up-hill trails which showed up very distinctly from below, and that these trails represented woodsmen's burro trails packing out *Cercocarpus ledifolius* firewood for the mines in the desert, he exclaimed "They ought to be ashamed of themselves!!" It is needless to say that they are not ashamed of themselves, that they haven't any such feelings, but are mighty glad in a desert land to get such good firewood! I said I had been on the Colorado in a rowboat. Gracious, said Stamper, I'd never go on it. It looks too ugly wherever I have seen it.

- Ralph Hopping says: I recognize *Ceanothus integerrimus*, in all its regions, Sierra Nevada, Santa Barbara and Trinity Co., white, cream or blue-flowered, by one infallible test, the taste, which is like wintergreen.

- ^{Oak Surgery.} J. O. Steer, of the Pacific Tree Expert Company, of Portland Ore. has been in here seeking a job on our oaks and incidentally condemning the work done. The work is however pretty good still and was pioneer work on the Pacific Coast - if not quite in the U.S. Steer claims that he can make a watershed which will throw off the water in case of a cement filling. He does not claim that his cement will not

shrink for any cement will shrink some. He says he sterilizes with Corrosive Sublimate solution and paints ("waterproofs") with a combination of pine-tar (not coal tar) and linseed oil and ? lard. Carbolicum for sterilizing will act too strongly on the cambium or kill it. Creosote has probably the same danger.

Home recommends cor. sub. for killing the spores and thinks that an alcoholic solution would carry further along the wood than an aqueous solution and believes it perfectly safe. See p. 166.

- Dudley, W. R. "The Big Basin Redwood Park" (*The Forester*, vol. 7, p. 157). A notable Cal. Fir: *Abies venusta* (L. C. p. 193).

- Purdy (barl) has just been in to scold me thoroughly about the Flora of California. He wants me to finish it up and present at once the known knowledge of the flora of California as a summary in my flora passed and revised under my critical experience and knowledge of 22 years work. The need of a comprehensive flora is so great that he objects to my research work just at this time. "You will add one per cent. to the knowledge during the year. We want the 99 per cent of knowledge that exists, right off". He is right and I should put aside my controlling desire to follow

up interesting ^{research} leads which is so delightful that it is almost a mad passion. He does not, of course, realize fully the magnitude of the job, but he is a helpful and friendly critic. He says ^{E. J.} Wiksman, recently deposed as Director of the Coll. Agr., will get his deserts in the next generation and will be known, as he is now, The Father of Practical Agriculture in California. "He has done more than any ten men to diffuse knowledge of agriculture in a practical way amongst the people." Ryden asked about Burbanks: Purdy put it in this way: "His true friends dare not tell the truth about him; his fool friends can't tell the truth about him and his enemies won't tell the truth about him. Wiksman's estimates were just but he was forced to stop writing about him."

- Hopking, Ralph, says *Cornus torreyi* grows near Dunlap (as in that general region of the Southern Sierra Nevada) and has long pendulous cord-like branchlets which root where they strike the ground. = *C. glabrata* Bth.

- *Cleome platycarpa*, "Pitt River mountain." So labeled in Pac. Grove Mus.

- "Dr. Tavis in a most effusive way greeted Carl Purdy as he came into a drawing room full of people seated about and told him how long he had wanted to meet him, an opportunity which he valued highly. ^{He etc.} Purdy listened and when Tavis had finished the expectant circle heard him say simply: "Ditto"! Everyone laughed ^{at first} and ^{then} decided instantly that Purdy was the right sort." — Edith Livermore.

- *Cereus giganteus*. F. H. Thomas says: "They grow 40 ft. h. in Arizona, and are often very abundant in S. Ariz., so abundant that you have to dodge them in driving across country, that is to say you can't take a straight course across country sighting on some desert landmark. Fallen ones show the tough shaggy ribs of the column finely on account of the soft inner parts decaying and disappearing."

On the Gila River are very fine Mesquite trees (*Prosopis pubescens*) which grow tall, with tall bunks. They are like the Locust tree in my backyard with trunk 10 or 20 feet high; the trees are 40 or 50 ft. h. They are like the form which

has run wild on the Hawaiian Islands, and very different from the low form in the Colorado Desert. In northern Arizona there is a Walnut [*Juglans rupestris*] which is a very large tree in moist places with tall trunk 8 feet in diameter and small nuts. The Sahuaro bears a fruit but it is seldom seen. The fruits of the desert cacti are often delicious but have so many enemies which destroy them quickly; animals, birds, insects, worms, deer, etc. There is a cherry in Arizona with fine large tasty fruit like the ordinary orchard cherry. There is also a pink Locust-

like the ordinary white-flowered Locust - but pink-flowered."

— Beetles on willows. All along the Colorado River from Needles to Yuma the willows had the edges of their leaves eaten by yellow beetles. For beques and beques it would be difficult to find a tree with whole leaves, altho not noticeably injured as a rule. The species attached were *Salix nigra*, no. 5198 and *Salix* sp. no 5208. Material sent to Woodward for det.

— *Heteromeles arbutifolia*.
 F.F. Thomas is acquainted
 with Rossi,* the big wholesale
 florist over in S.F., and
 proposes to secure some data
 regarding the amount of
native stock cut for dec-
 orative purposes and brought
 to S.F. Mr. Thomas says:
 Carloads of Christmas Berry
 come from Tuolumne Co.,
 it being finer there than
 elsewhere acc. Rossi. His
 Hacheberry stock (*Vaccin-
 ium ovatum*) comes from
 Marin Co. There is also
 used Black Oak on a
 considerable scale. Mistletoe
 comes from the Sacram-
 ento Valley says Thomas.

* Present Mayor of San Francisco.

Javanese — Miss Beane talks
 about the Japanese nurserymen whom
 she visits a great deal. One of them
 described his process of making a potted
 cherry bloom every year — an in-
 credibly old tree, one of their dwarfs. He
 claimed the Americans couldn't do it,
 first of all because they haven't trees
 old enough. He root-prunes after every
 flowering season. I remarked that
 decreasing the vegetative power or
 removing vegetative parts induced
 reproduction or flowering, that nature
 often "root-pruned" or "branch-
 pruned" because the soil or conditions so
 poor, as in the chaparral where the
 shrubs fruit very heavily; that a tree
 which could be partially killed so
 that its vegetative existence was
 threatened would throw all its last-
 energy into reproduction as in
 the case of girdled Tan Oaks.

— Tallest trees on earth, questioning
Eucalyptus viminalis. Tallest = 325
 ft. Maiden, J.H. in Melbourne Argus,
 23 Mar. 1904.

— Rose Springs = Placer Co. Cf. Hall
 in litt. 1913.

- T. N. Shinn, Original Tree Doctor Co., called today. Says like the rest that our cement work on grounds is all wrongly done. Says he can put in cement so as not to crack, etc and without appreciable shrinkage. Says the amount of shrinkage is not observable and will be covered by the growth in one year. But I pointed out that growth is non-existent, not theoretically, but practically on the edges of some old cars and old basins. He tried to say that a tree was either alive or dead, if it was alive, it was growing etc. I told him that on an old oak the growth was so slight you could not see it or observe it. He says he sterilizes cavities with creosote oil; and

with a gas (formaldehyde) and some other gas of which he had forgotten the name. The gas used by closing the cavity of course. His cement he claims to mix dry. See p. 156

- *Baccharis sarothroides* Gray, no. 5287 Jepson, Whipple Mts. I regard the same as Parish no. 8349 Calixico and as Schellenberg no 6 Chuchawalla Bench which last Hall calls *B. sergiloides*. I regard all 3 = to San Diego Orcutt which differs only in having slightly narrower heads. The pappus in all three have lanceolate dilated tips. Hall's Panamint + Brandegee Providence Mts = *B. sergiloides* and has quite different-looking heads from all the above. The dif. in sterile heads of the two species not well worked out. - Jan. 13

- Height of trees. *Eucalyptus globulus*, 375 ft. h, acc Eucy. Britt, 11th ed., vol. 9, p. 868.
- *Cephalanthus occidentalis*. F.M. Andersen came in and described a tree as follows: "Fls. very fragrant, white, in little heads, tubular, expanding at end into a little trumpet; foliage light green; bark tan color, smooth." - I guessed as above and ^Iguess I am right!! He saw it on Kern River, flood-plain, opp. oil district. There is a "Button-willow" station towards the head of the San Joaquin.
- Stivers, C.A. "Hard & Ornamental Woods Pac. Coast; pp 536-8" (State Cal. Agr. Soc. 1873).
- Cal. botanists. See early vols. Trans. Cal. State Agr. Soc.

- *Atriplex Torreyi* Walp. There is a U. C. spec. so labeled from Kern Lake, Dary, 2911. It has the whole appearance of *A. lentiformis*, the size, shape and margin of the fruiting bracts are right for that species but the bracts are distinct to the base! There's the nub. The branches are terete, not angled as in *A. Torreyi*; the spike axes are pliable as in *A. lentiformis*. Now in *A. lentiformis* the fruiting bracts are completely united below, there's no free edge; the bracts might be united & yet show the constituent bracts; it is not so here; it is like a piece of cloth folded over to make the edge. Now in *A. Torreyi* and in Dary's spec. the edge of the two bracts show all the way around to the base, even if so compressed that they appear ^{much} sticking to each other.

- *Barispermum hyssopifolium*
We have spms. from Ore., Wash., Ariz.
but no Californian.
- *Atriplex truncata*, no Calif. spm.
in hb. Coll. at Reno, Nevada, by
myself in 1896. It is very
close to *A. expansa*, esp. in
aspect.
- *Kochia*, seems as if it ought
to stand nearer *Chenopodium* in
the sequence.
- *Sarcobatus vermiculatus*, near Al-
turas, Modoc Co. acc. B.C. Goldsmith.
- *Teloxys cornuta*, not rep. in hb.
nor the genus. Prob. not in Cal.
- *Atriplex pusilla*, no ^{Cal.} material
in hb. (Osg. + Camp Halleck, Nev.).
- *A. truncata*, no Cal. mat. in
hb. Reno, Jepson, 1896 = nearest.
- *Chenopodium rubrum*,
Migger Blough + Ballou acc.
Braunton.
- *Kochia californica*, styles
2 or 3! (apropos of Wats., Bot.

- cal. "styles 2") ^{any} Material from Mohave
Desert?
- *Kochia americana* Wats. Coll.
at Tonopah, Nev., May, 1907
by William H. Schockley.
- *Chenopodium fremontii** and
leptophyllum. None in U.C. hb.
from Cal., nor anywhere near
the line. ^{latter} Not mentioned in
Death Valley Exp., a region
where it would be expected.
- *Chenopodium capitatum*. No
spms. from Cal. in hb. Piper, Fl.
Wash. p. 243 says "California"
in giving range. Sisson!! Jepson!!
1894!!
- *Chenopodium vulvaria* and
glaucum = Calif. acc. - Greene.
Fl. Fr. 165.
- *C. californicum*, no record from
Sierra foothills except far south.
^{see Cov. Bot. Death Valley.}
- * cf. Contrib. U.S. Nat. Hb. 5:95.
Seeds used as food by Klamath Indians.

- *Gleuophodium breumontii*. The dif. betw. this and *C. album* seems to come down to "pericarp readily separable from seed" ^{in former} and firm to seed in latter. We have no material which illustrates this point satisfactorily as to *C. breumontii*. Parish does not know of it from Cal. (see litt. Jan. '13). In Barron's "Ethno-Bot. of the Coahuilla Indians", p. 57, I am credited with having det. the species as on west. edge Colorado Desert. I have asked Miss Walker to see if any material from Barron's, of this species, could be found in Mus. or Herb. and she replies in negative.

- *Wislizenia palmeri* not in Cal. acc. Parish, 1/17/13. in litt.

- Sleepy grass. = *Stipa robusta*. See Letter file sub Jackson, 1911.

- Douglas, David. Refer. to Vitch's Crifer Book. Also Journ. Roy. Hort. Soc. of the time. Lawson marvels at his youth while on the expl. of western Am. (only 10 years, begins at 25 years of age) and the very tremendous results. Not a garden in Europe that has things of Douglas.

- Buffalo Grass, = *Sesleria dactyloides* (cf. Emory, ^{Mil.} Rec. p. 155.

- Grama Grass. Emory, l.c. p. 154.

- Greene, E. L. His egotism has formed a marked part of his success, but it takes many curious forms. It crops out in a letter ^{to me} 28 Dec 1912. ^{concerning} a registered vol. of leaflets, "I take no chances of theft out of the mail"! It would never

occurs to Greene that his valuable work would not be and could not be of the slightest value to the ordinary person. The leaflet could not be sold, if in the hands of an ordinary thief, for 5-cents.

- Dudley, W.R. A.A. Lawson says Dudley's position at Stanford in botany was that of an instructor having the title of full professor. He had no power, had miserable attic quarters where he broke his head getting into them, and came to Stanford under false misrepresentations. Dudley gave up his position at Stanford because he supposed he ^{was to be head at} Cornell _(Dept.).

- Lawson, A.A. Is here on his way to be Prof. Bot. at Univ. Sydney, N.S.W. He does not seem to me to have grown in general

mental stature as I expected. He speaks of most commonplace things in a most impressive manner, pausing, throwing his head back and looking at you with great seriousness as tho' he had uttered an original and profound statement - almost enough to take your breath away. He spoke of *Amaranthus retroflexus* ^{* see p. 176} as a tumble-weed in this way, saying it was the most extraordinary device for dissemination he had ever seen! He is as careless about his toilet and clothes as ever, his finger nails being in deep mourning. However he is succeeding finely and is doubtless doing most excellent work. He gets 900 L at Sydney. ^{supply standing =}

- Redwood 150 cars a day for 200 years. S.F. Examiner, 1/9/13. See clipping.

Berkeley
Cork Oak.

- Cal. Agr. Exp. Sta. Rep. 1902-3: 200
 " " " " " " 1903-4: 207
 " " " " " " 1898-01: 12
 " " " " " " 1895-99: 381

- Cont. from p. 175. which he had just
 * seen under the wind in S. Cal. or Arizona.

- *Verbena bipinnatifida* Nutt. Providence Mt., Brandegee. I cannot distinguish *V. ciliata* Benth. from this using Brandegee's *Agua Dulce*, Lower Cal. for comparison as well as other forms. The outlets and the the figuring of their scars is ^{the} same. Latter has as a rule less divided leaves, a better char. than any other I know. Gray says former perennial and latter annual but their things are so commonly in fl. first year that this point is dubious. In the most marked form of *V. ciliata* the leaves are not divided at all but only coarsely toothed. *Verbena* cont. See. p. 179

- Climate. December a beautiful month, clear and dry. Jan 2, 3, 4, 5 North wind, very cold, esp. 3 & 4. Lowest records in most parts of State. Freezing up general and unlike anything seen in a long time. Iceles general in Great Valley. ^{on fireman's cables} Water frozen in fighting fire in Berkeley Sunday night. Since the 6th more or less rain, esp. Jan. 15, 16, 17, 18. In Great Valley windmills sheathed in iceles on great freeze. ^(in S. Cal.)
 - *Chenopodium californicum* Especially in arroyos beds, swales in the hills also; where there is moisture. - H.M. Hall.

- *Verbena polystachya* HBK. S. Cal. acc. Gray; also Abrams. No genuine in U.C. hb. Drawn up from Palmer's 339 Durango for Fl. Cal. Perhaps? San Diego, Brandegee. See hb. see p. 179.

- Greene, E. L. Carl Purdy says:
 "I would not accept a species
 because it was Greene's and I would
 not reject it because it was Greene's."
 He has on the whole done more
 harm to Cal. botany than if he
 had let it alone. He compares a
 new species, not with its nearest
 ally, but with one not at
 all near it. A ^{new} species ought
 to be compared with its nearest
 ally so one could ^{be helped to} form a
 mental picture of it." - The
 above judgement is interesting
 because it is sincere and
 clear and agrees essentially
 with my own except I
 minimize the harm done.

Doubtless Greene has forced ^{on others} re-examination
 of material too carelessly passed over.

- *Corylus rostrata*, not in
 Santa Lucias acc. H. A. Greene.

- *Verbena canescens*. "Southern border
 of Cal." in Syn. Fl. means northern
 Lower Cal. See Bot. Cal. where
 quoted as "Canton Tantillas" in Lower
 Cal. *V. ciliata* is in similar
 case with ref. to both above texts.
 Of neither have we spms. from
 Cal.

- *Verbena polystachya*. We have no
 spms. from Cal. unless Browder's
 June 1894 San Diego & it. The
 things from S. Cal. called *polystachya*
 seem to be *urticifolia*.

- *Verbena officinalis*. We have no spms. from
 Cal.

- *Polanisia trachysperma*. None
 in hb. from Cal. nor indeed any
 species of the genus.

- *Cassia covasii*. None from
 Cal. in hb.

- Kellogg, Dr. A. His spiritual nothness
 see sub. *Ceanothus papillosus*
 in Japan "Kaw Fyke".

- McClenahan, rep. Davy Tree
Effort Co., called to say cement
work on our bees was defective.
Also admitted, in response to
my suggestion that there were
other bee expert cos. around,
that they were so-called
bee experts but do not
really know their business.
He disinfects cavity with cor-
rosive sublimate and also
wood alcohol. Near bank he
dilutes these sterilizers.

- "Opularia opulifolia" =
Physocarpus opulifolius, Oak
Flat near Millwood, "creek
full of it", - Ralph Hopking
who coll. spec. for Forest
Service

- ✓ *Lycium ewoheri*, based on Hall's
6194 Victorville, Mohave Desert.
Fils. ^{at least free portion} *glabrous*, inserted very high
on cor. tube. Ovary with a sub-
horizontal depression or constriction on each
side at middle or nearer top of
cell. Also observed in Hall's 6031
Eagle Mt.

- *L. fremontii* Gray. Not included
as Californian by Abrams, Trees &
Shrubs. S. Cal. But Brandegee's
Borregas spr. and
Signal Mt. Colo. Desert may be
it. (Borregas Springs, 4/22/95.

- *L. parishii* Gray. Mesa, San
Bernardino, S.B. Parish, 1895,
Apr. seems closest to *L.*
richii but is puberulent or
pubescent. Calyx-lobes oblong,
nearly equalling tube.
- *L. richii*, Tronoy, Catalina, '94
Filaments very woolly below,

just above point of insertion.

- *L. hassei* Greene, Cuet. by Brandegees from original plant. They say = *L. richii* cf. Hall, S. Cal. 1903.

- *L. andersoni* Gray, Drake, Nandburg. Fil. inserted near middle cor. tube, very slightly hairy.

Try out this:

Cor. tube much narrower than calyx at calyx summit. -- *L. andersoni*

Cor. tube as large as calyx at calyx summit. *L. torreyi*

- *L. californicum*. San Diego. Cleveland. Stamens densely short-hairy at base!

Todes Santos, Anthony 211.

Densely short-hairy tuft a little below middle of fil.

- *L. cooperi*. Victorville, Hall, no.

6194, fil. inserted high on tube, in throat! the free portion short and glabrous! Tube cor. pubescent below. My diag. based on this + also Halls 6031.

- *L. parishii*. San Bernardino Mesa, Parish, Apr. 1885. fil. lightly pubescent below, inserted low down. Brandegees Vallecitas, Colo. Dec., Apr. 10, 1896 is undoubtedly the same as 25 part of the sheet, having the the char. calyx lobes, pub. etc short corolla. The other part

of the sheet is *L. andersoni* beyond doubt? All the material on the sheet looks as if it came off one shrub and I've no doubt it did. Perhaps *L. parishii* had better

- not go as a formal var. of *andersoni*.
- *L. torreyi*. My diag. based on my 4782.

- *Sequoia gigantea*. cf.
 ellsworthii Hunt. Hunt., Sept.
J. Geography, Yale Univ.
July, 1912, Harpers Mag.
acc W.V. Nutt. Secret of
the Big Trees. Readers Guide
under Climate.

- *Arctostaphylos*. Ralph
Hopping recognizes 4 species
 in southern Sierra Nevada:

No. 1. "*A. glauca*" which he says
 has small sticky fruit,
 sticky flowers, and
 sticky leaves. About the
 last point, he weakened
 a little, I thought, but
 said specimens stuck
 to the paper in drying.

My no. 4702* Tule River is
 undoubtedly it, that is

* = *A. vacida* Parr.!

the thing he has in mind
 which is whitish leaved.

No. 2. *A. pauciflora* Japan. greener
form* than preceding with
 large smooth depressed
 globose berries and pale
green leaves. Ranges to
 rather higher alt's than last.

No. 3. *A. patula* Greens. The
usual dark green form.

No. 4. *A. nevadensis*. The
usual low form.

* Represented by my no. 4704.

- *Ceanothus integrifolius*.
 some leaves remain as all
 winter acc. Hopping. Impos-
tant part of the cattle food
 about Dunlap and Millwood.
 Ranges from 3500 to 6000 feet,
 in lower part Yellow Pine Belt
 and immediately below.

cont.

Samolus divaricatus overlaps it - but doesn't range as high, altho it ranges lower, say 2000 to 4000 feet. White flowers.

- *Rhamnus rubra*, etc. I have just been fussing over the Cal. *Rhamnus*. When one reads Greene's acct of *R. rubra* he feels that with the deciduous foliage and red fruits it is fully entitled to be a new species. Then one reads Mrs. B's acct in Proc. Cal. Acad! The statements and rejoinders in Pitt. & Cal. Acad. leave but the one impression, that Greene was determined at all hazards to maintain *R. rubra*, Mrs. B. to reduce it! So what is left for the judicious? The

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mean course of Trelease is evidently about right, namely var. *rubra*. But ^{is} it possible that Greene did not know that *R. californica* has red berries just before maturity when they become black? His ignorance is often so unexpected and great re. Cal. botany that it may easily be so. Still no independent observer has thought it worth while to say definitely, *R. rubra* has berries black when dead ripe.

I have also fussed over *R. californica*. There seems to be nothing to do but admit it is a polymorphous form from all parts of the state. I thought it might be excluded from the Sierra Nevada, leaving var. *foumellii* & *rubra*, but apparently not.

- Greene, E. L., a remarkable and interesting character, highly ^{self-}contained, self-sufficient and with a well-nigh colossal faith in his own infallibility. He is perhaps the one botanist in American history who never made a mistake. He inadvertently did things to be sure, but actual mistakes in his pages were not his own, as for example his acceptance of *Ceanothus anderssonii* Parry from his friend Dr. Parry (Cf. Leaflets, 1: 65) and his being misled by Dr. Asa Gray which occurred very often, as is to be seen from ^{(Greene's) printed} his pages. It is best not to consider him, ^{just of all} I think, as a botanist, but as a man

with an ingenious and quite powerful intellect who had been turned loose in botany, but whose activities there were not different from what they would have been if he had been a priest or a partisan historian. He had a disposition never to use a direct and enlightening statement ^{which would help one} in regard to the use of working clues ^{as to} species if he could use any other, and he generally could. He would publish new species from ^{geog.} areas that I well knew, but I was always in doubt about their range ^{as published}, the impression upon my mind being that they belonged to some wild and unvisited region. He had an imagination, in other words, which would have been of very great value for the back ground work of a ^{popular} historian or novelist.

cont. from prev. p.

A. A., while in West Indies with Bower made herb. sea weeds which he is now taking with him to Sydney.

— Climate. The Big Freeze of 1913.

Cont. from p. 177. Parish in litt. says the January freeze in S. Cal. not at all exaggerated in the press. Newspaper statements put the damage at \$20,000,000⁰⁰ to \$40,000,000⁰⁰. Met P. S. Woolsey yesterday who says:—Just come from a visit through S. Cal. The frost was terrible in its effects. All Eucalypti under 16 or 17 ft. h. frozen & killed, and tips of branches of older trees killed. All the avenues of Pepper Trees killed*!! Look like white haystacks! A dreadful sight. All orange trees under 5 yrs old killed

* But see A. J. Cook in Pac. Riv. Press, Mar. 15, 1913

and older trees badly burned, unless where smudging was effective. People in towns beginning to sue orchardists for smudge damage to their houses, the cloud of soot settling on the houses and ruining their appearance*. — 15. Feb. '13

— *Prunus ilicifolia*. Mott says he collected this in the hills east of the Napa State Insane Hospital. He described it in such a way as to indicate that this was the species. It was used for greens in Christmas decorations at the hospital. This station would be only a short distance from my Cordelia station, perhaps but miles in an air line & only a little north of it.

* Feb. 24, on & about, for three days 6 inches rain fell at Los Angeles causing floods, etc. Heaviest rain in history of that section. In 24 hrs 5.08 inches!!

San Leandro.15 Feb. 1913.

- Dr. Soodshead showed me yesterday a single flower stalk of *Frutillaria liliacea*! said to have come from San Leandro. Went to San L. today and scoured the hilltops east of the town for two hours but found no *Frutillaria* altho I looked in the most likely places. [San Leandro, ^{var.} Fred, O.R.!!]

✓ No. 5299. *Eschscholzia californica*. Hilltop plants, the stems mostly scapose and leafless, 1-flowered, after the fashion of early dwarf plants. Deep golden color. - San Leandro.

- *Cupressus pygmaea* Sarg. Material from Ft. Bragg, Feb. 9, 1913, collected under my direction by Miss Lula M. Estee. Sent to Sudworth who shares with Sargent. Ceres show considerable

range in size. Some have black seeds, some light brown seeds just as in the little dwarf grove at Monterey which is the original of *C. gormiana*. The branchlets are also noticeably square (in X-sect), as in the Monterey also.

- California Academy of Sciences. Its early members were a fine lot I think. The Proceedings show their taste and quality. The pages contain no puerilities or cheap jokes such as one finds in the Bulletin of the S. Cal. Acad. Sci. The latter contains pictures, fairly good ones, of S. Cal. scenes but illustrating no article! Just run in. The attempt to "draw up" enthusiasm in 1905 was given expression in the Bull. in a poor way. Davidson in Jan. '13. issue betrays personality in saying mistakes not all "confined to amateurs either." Cont. p. 198.

- Bennet's Hill is quite gay with flowers - even so early. There is an abundance of the first bloom of *Brodiaea capitata*. The upper slopes are bright red with the flowers of Red Maids (*Calandrinia canescens*). *Lepidium* ^{*menziesii*} *nudum* is in fruit. *Sanicula bipinnatifida* is in flower; *Pucedanum cornifolium* is in flower. Also *Medicago denticulata*, *Lupinus micranthus*, *Amsinckia intermedia*, *Plagiobothrys* sp., *Orthocarpus viridiflorus*, *Frutillaria pluriflora*, *Senecio vulgaris*.

The Big Freeze. Frank McKenitz Jr. says the money loss in S. Cal. is 100 million dollars. See p. 177.

No. 5300. *Microsteris gracilis* ^{(Hook.) Greene}. Corolla pale pink, its lobes notched. Stamens unequally inserted in throat. - Bennet Hill

No. 5301. *Brassica arvensis* (L.) ^{BSP.} Bennet Hill. Branching from base, 1½ to 2 ft. h. = *B. Kaber* (Dc.) Wheeler
var. *pinnatifida* (Stokes) Wheeler

No. 5302. *Dichelosperma pulchellum*
Brodiaea capitata Benth.
Very abundant on Bennet Hill.

No. 5303. *Frutillaria pluriflora* ^{Torr.}. Perianth a beautiful pink, a darker lineate band down middle of segments from a little before apex to base. Stalks 1 to 7-flowered. Style entire. - Bennett Hill, both on the side of the hill and the flat at base.

- *Condalia spathulata* - none in U.C. hb. from Calif.

cont. p. 195.

Indeed professionals if he but knew
it make the most mistakes if they
are active and doing anything. Now
over they are constantly called on
to give decisions on inadequate
material and at short notice. It is
often if not always the case that the
amateur ^{if he makes} can take ^{almost any amount of time &} infinite pains.

- *Annabrouse saxorae* Torr.
Sand Hood. cf. U.S. Agr. Rep.

for 1870, p. 424.

- *Greenella*. For E. L. Greene
- Bolander, President of the Bay
Dist. Hort. Soc. (See Trans. Cal.
State. Agr. Soc. for 1872. ^{p. 515} Note
the name of Parry on the list
of ^{among} members.)
p. 516.

- *Pholisma arenarium*. See
sub Grant in Letter File, 1913.

- *Corispermum hypsochilum*
In Ariz. (U.C. hb). C. villosum
in Nevada acc. Piper. Fl. Wash.

- Congdon, J.W.

Trisetum congdoni.

- Wright, W.G. cf. Bull. S. Cal. Acad.
Jan. 1913 for sketch of his life.

- Brandegee, K. Very kindly criticized
my Fl. W. and Cal., I noting the corrections
meanwhile for the 2nd ed. With her usual
positiveness she said: "green never pub. *Erigeron*
dasycanthum var *fipsonii*. Put it
"green in herb". Carelessly, I did so, only
to find the var. was regularly pub.
in Fl. Fr. 1907.

- *Calluna vulgaris* = Scotch
Heather. Ling.

- Tryon, of *Lycnothamnus*. cf.
Bot. Gaz. 11: 197, 330.

- Harford. cf. *Melica harfordii*.

- *Asclepias mexicana* Cav. "weed, persistent
and spreads rapidly" - Baer in l. ft. 21 July 1913.

- Herbaria, private. cf. Muhl. 9: 26, "type
of *Trifolium halleri* in my herbarium, P. B. Kennedy."

- *Carpenteria californica*. Re.
Fremont's routes. consult Williams
in Pac. R. Rep. 5: 17.

Berkeley, 1913

Climate of California.

- The winter drought was broken a little early in January. After that no rain until about March 16. Mar. 20, 23, rained again scarcely any more. A little in June which is ^{cool}.
- Gambel, W^m in California. Town. Phil. Acad. ^{N. Am.} vol. 1. pp. 25, 215. Was at Monterey, (July 20), San Juan, Santa Barbara Cf. p. 27, 219, 218, 46. also at Mazatlan, Callao, & Chili.
- Nuttall, mentioned, Town. Phil. Acad. 1. 27. (new ser.).
- Nuttall, mentioned several times in Audubon's Life by in Engelman's Library. The Index cites some but not all of the references.

Questions?

- Queen Anne's Lace? In trod?
 - The Pocket Book of Poems & Songs for the open air. Compiled by Edward Thomas. (E. P. Dutton. 1907.)
 - What is the right & left bank of a river?
 - Whirlpools? See Ency. Britt.
 - Beans and their classification.
 - Olneya Tesota. Means of specific name?
 - Acotillo. What does it mean?
 - Desert Holly? = *Striplix hymenelytra*
 - Queen Louise?
 - Stem to Judgdon?
 - Bas-relief?
 - Burton's Cassidia + Travels.
 - Med-incased ^{herb.} plants?
-
- Edward Beggs, Ehrenberg.

Botany 3.

483 Euphorbia Legume. Ros. grain
also the woods.

- Lolium tenuis - wheat
still say wheat turns to cheat, they
know, they seed wheat & get cheat
- Parts of wheat seed. Bran. Middlings.

Spool no. 3. No 5. Fill - $\frac{1}{25}$
No. 6, Ironwood. Fill - $\frac{1}{4}$. Lower part
Rude valley, Ariz. See p. 122

Spool no. 4, No. 1, Fill - $\frac{1}{38}$. Peak in
Light House N.C. (Baker's Edg), Salix
nigra. No. 2 Fill - $\frac{1}{25}$. Pichaco Peak.
Beach + Coyote Willows. No. 3 Fill - $\frac{1}{15}$.
No. 4. Fill - $\frac{1}{38}$. Cottonwood Grove at Band. No. 5. Fill -
 $\frac{1}{38}$. Warrick House, near Yuma. No. 6. Fill - $\frac{1}{25}$. Indian Wells.
No. 7. Fill - to. Opal Lake at Sugar Lake, Ariz.
Variety is the greatest thing

nature. There is nothing more
important than varieties. One
man will plant one variety &
another a closely allied but
variety and we will make a
fortune and the other go broke.
Reverie.

No. 8. Baccharis. Fill - $\frac{1}{40}$
No. 9. " " close at hand
1110

The P...
Massachusetts Beach
as low as possible
+ flat water this
Side of H. W. S.
beach sand & shells

No. 4. Carny bank
No. 5. Needles
No. 6. Needles
all above Fill + $\frac{1}{25}$

Spool. 2.
No. 1. Needles. Fill x $\frac{1}{25}$
" 2 " Fill - $\frac{1}{38}$
" 3 " " - "
" 4 " " - "
" 5 Needles, up stream
Fill - $\frac{1}{38}$. Willows
(Salix nigra) and Atriplex
polycarpa

No. 6. Mohave Rock
Fill. $\frac{1}{38}$
No. 7. Parr below house
Fork Fill - $\frac{1}{5}$. Look
No. 8. Pinnacle on
Arizona short at
La angle turn of
river below Bill
Went Fork Fill - $\frac{1}{5}$

18 in diam. wide
8 Branches
No. 10. Populus
freemontii stand
45-50 ft. h., no
average tree
measured 15 in.
diam at 4 ft. The
SM. (no.)
its end gray
willow of the
region. See p. 80

Spool no. 3
No. 1. Mon. Cactus
 $\frac{1}{35}$ - 11. No 2. $\frac{1}{50}$
tallest - 20 ft. h.
No. 3. Atriplex lentifolia
4 ft. h. + 2 ft. 2 in. for
single tag. No. 4. No. 4. ditto
 $\frac{1}{55}$ - $\frac{1}{16}$. $\frac{1}{38}$ - Fill
No. 5. 233 collected
Screw Mesquite